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FANEUIL HALL MARKETS

BOSTON, MASSACHUSETTS

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FANEUIL HALL MARKETS REPORT

Prepared For The

BOSTON REDEVELOPMENT AUTHORITY

City of Boston

Massachusetts

by

ARCHITECTURAL HERITAGE, INCORPORATED

Faneuil Hall Market, Boston, Massachusetts

and the

SOCIETY FOR THE PRESERVATION OF NEW ENGLAND ANTIQUITIES

141 Cambridge Street, Boston, Massachusetts

under the direction of

MR. WILLIAM ENDICOTT

MR. FREDERICK STAHL

MR. ROGER WEBB

MR. WALTER WHITEHILL

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FANEUIL HALL MARKETS

Urban Design and Architectural Report

Structural, Mechanical and Electrical Reports

by

Frederick A. Stahl, A.I.A.
William L. Thoen, P.E.
Warren P. Connor, P.E.
Joseph V. Herosy, P.E.

Boston, Massachusetts
1968

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F A STAHL AND ASSOCIATES ARCHITECTS

URBAN DESIGN AND ARCHITECTURAL REPORT

FANEUIL HALL MARKETS STUDY

The broad objectives of the Faneuil Hall Markets Study relate to the feasibility of restoration and revitalization of a primary district of approximately five acres bounded by Chatham Street, Merchants Row, Clinton Street and Commercial Street, and containing a group of mercantile and civic buildings of undisputed significance and beauty in their original state. In addition, reasonable inferences were to be drawn regarding compatible enhancing relationships and developments of the environment which forms a setting for these buildings, so that recommendations might be given regarding the suitable development and stabilizing of this vital area of the city core

The following summarizes the present physical situation and its potential for the future, and contains recommendations for the realization of this potential.

I. The Surviving Buildings/North and South Market Buildings

A. North and South Market Street mercantile buildings (originally 45 buildings in all) were conceived as repetitive structures of very great flexibility and utility within modular party wall divisions. They were, in that sense, truly "modern" buildings built from largely interchangeable timber and masonry units to a common design.

The original engineering of these structures for a typical floor loading of 300 lbs. per square foot illustrates the deliberate overdesign for flexibility and longevity, far beyond what might be expected from the comparable warehouse structure of the present day.

To the extent that these buildings have survived in their original form, they lend themselves to adaptation to modern uses with very little inherent difficulty. The Easterly section of North Market Street, for example, contains some 16 units whose basic construction has survived intact with minor exceptions, within which some 19,000 square feet of flexible space on a common level for each floor may be created by appropriate openings through existing common walls. Common walls were originally sized for sufficient structural capacity to permit this without risk.

The problems presented in the existing buildings are a function of later "improvements" which disrupted the uniform repetitive pattern of the original development in a variety of ways, and which today form obstacles to a broad scale flexible space use.

North Market Street Row at its Westerly end presents these problems in their clearest form. Six completely separate and unrelated buildings occupy the space of seven original uniform flexible buildings (seven original lots). Floor levels and fenestration do not coincide. If one requires compliance with the present Boston Building Code and elevator access to upper floors, in order to realize the potential value of the location and the physical amenities, six separate and distinct office buildings would have to be created, each containing an elevator, two staircases and public toilet facilities within a typical floor area of approximately 1,200 gross square feet per floor. Six elevators and twelve separate interior code qualified staircases would thus be required to serve the remaining available usable area of approximately 5,600 square feet per floor (total of seven buildings).

It is difficult to see how the problems of this group of buildings might be resolved without substantial reconstruction sufficient to unite the floor levels and provide a typical floor area adequate for modern tenancy and reasonably efficient for both staircase and elevator access.

If it were not for the context in which these seven buildings are placed, there is little doubt that clearance and new construction would be a suitable recommendation under the circumstances. Their situation, however, as the first seven lots adjoining 16 substantial original buildings built to a single design and with common repetitive elements throughout, must alter this judgement. We feel that it is entirely reasonable, under the circumstances, to recommend that non-conforming construction in this area be removed and replaced with new construction conforming to the original design in all material respects. This, in principle, enables the entire block to be handled as one building, subject only to its present interruption by the three lots occupied by Durgin Park. It may be pointed out at this point, however, that the omission of Durgin Park from a comprehensive planning of the block is in no way detrimental to the operation of the remainder, as planned. The proposals for elevator and stair access cores with ground level entrance lobbies provide capacity to incorporate these buildings at any time that their present use may be abandoned or altered. The typical floor area of the seven buildings to the Westerly side of Durgin Park (8400 square feet of gross area), when established on common levels, is quite sufficient for accomodation of a variety of tenancies of the nature proposed.

South Market Street Row, although visually chaotic in its present state, contains only two buildings which vary substantially from the original construction program. These are the end lot on Merchants Row (Westerly) and the fourth lot back (building demolished). All of the remaining buildings (20 in all) retain the bulk of their original floor framing at its original levels despite exterior alterations and additions. The problems presented in a restoration/reorganization for modern use of these buildings are substantially less in proportion than those concentrated in the Westerly end of North Market Street. These facts are reflected in the construction estimates which show an average per square foot cost of $19 for South Market Street as opposed to $21.80 for North Market Street.

If one accepts the basic adaptability of the original design format of these buildings, the question may still be raised as to the advisability of removing added floors and restoring the original roof lines. We believe that from an architectural and urban design point of view, as well as that of historical authenticity, there is no question of the need to carry a restoration program far enough to restore original roof lines and profiles. The entire broad spacial and architectural composition of these buildings is related by its cornice level and by the consistent repetition and continuity of the roof form. In fact, the unique and compelling interest of this group of buildings might well be a consequence of the similarity of their basic forms played against the clear monumentality of the central building, and framed by their quiet dignity.

On investigation, we have found that a typical renovation/extention of the roof and the upper floors was performed on a number of buildings (approximately 14 of 22 on South Market Street), at approximately same time (probably 1875-1885) and in much the same fashion. A number of these buildings have since had additional exterior improvements, but 10 retain their originally constructed additional levels and facades. These were uniformly built of wood frame bearing on top of the original granite facade construction, frequently faced with copper, but, apparently, also left exposed and painted. Without exception, these original surviving additions are deteriorated to a point which compares very unfavorably to the original construction to which they were added, and substantial reconstruction and exterior rehabilitation would be required to make them habitable for the uses under consideration. In addition, suitable elevator and staircase access to these levels require the lateration of existing original buildings to the state of these later additions. We do not feel that wholesale

reconstruction of these added levels is merited either by the economic considerations of the cost and rentability of the resulting construction, nor do we feel that this effort could in any way complement the design and construction standard established by the original development.

A last remaining point may be raised regarding the surviving buildings, that of their structural soundness and adequacy for modern use. While the structural evaluation of these buildings is contained in a report by LeMessurier Associates (William L. Thoen P. E.) which follows, perhaps appropriate to state at this time, that the soundness of the masonry is remarkable, exhibiting virtually no signs of movement or settlement, and that the surviving original floor systems (heavy timber joists, and wood deck) are sound and have a calculated capacity to sustain upwards of 300 lbs. per square foot of superimposed load as constructed. While no investigation has been made of the subsurface conditions relative to original foundations, the entire absence of settlement strongly indicates a sound condition.

One major deficiency in the soundness of the original construction is the flooding condition which now prevails in most of the basements. The original specifications for the construction of these buildings called for waterproofing of all basement levels, by means unknown at this date. Considerable investigation, including laboratory samples of water taken at high tide, has led to inferences regarding the cause and the proper corrective measures for this condition. It is believed that widespread leaking of city sanitary and storm sewer systems in this area is responsible for the quantity of water available in the subsoil at high tide. The soil itself is not sufficiently permeable to sustain rapid influx of tide water so far removed from the harbor edge and samplings of flood water in basements indicate a large component of sanitary sewage. Embodied in our proposals, therefore, is the abandonment of the existing city sewage system in the area, and the removal or capping of antiquated sewer facilities, materially reducing the quantity of water available for flooding. In addition, we have recommended a thoroughly modern system of underdrainage and master sump pumps (one each per block) together with dampproofing of all basement levels.

II Conversion of Surviving Buildings to Modern Use

The uses proposed (See Rental and Marketing Report) are miscellaneous retail (basement and ground level) and specialized office occupancy (second, third, fourth, fifth and gallery levels). It is necessary to examine the suitability of the restored original construction for these uses, from a number of points of view. From the layman's point of view, it may be helpful to compare these buildings, having from 55 to 65 feet in depth and a length of 525 feet ±

as related to the Center Plaza Project with its depth of approximately 85 feet and its lengths of 750 feet + . The general planning arrangement of these buildings resembles Center Plaza, while the tenancies envisioned are in scale with the slightly smaller dimensions.

A. Office Planning Dimensions

A quality office building must meet certain basic criteria to assure its rentability and utility over a productive life span. For each type of of office structure a range of types and sizes of tenancies must be accomodated within good planning standards, and adequate flexibility must be provided for expansion and future change. The basic dimensions of the South Market Buildings, being structural bays of 22 feet by 65 feet, when treated as a continuous unit with appropriate openings of common walls, provide a planning system for tenants which compares very favorably with good modern practice. Typical exterior offices can be provided at 10' 6" in width and in varying depth, and interior space permits planning of open office areas, reception areas, secretarial alcoves, conference rooms, libraries, etc. The North Market Street Buildings at a 55' depth require tighter planning, but in our opinion present no insuperable problems.

B. Sizes and Types of Tenancy

The flexibility for tenant accomodation within the modular system of the original construction permits a range of a minimum of 600 sq. ft. + to a workable maximum on one level of 5,000 to 6,000 sq. ft. + of rentable area. Original access staircases in South Market Street may be retained when desired to permit multi-floor occupancies on the desirable South Market Street frontage of the building. It is frequently found that premium space (i.e., desirable views and exposures) may be desired on one facade of an office building by rental of partial floors as opposed to equivalent space on one level incorporating less desirable exposures. The retention of original staircases is thus seen has a natural and desirable feature, should this occasion arise.

C. Architectural Content

The Architectural character of office space is becoming more and more important as greater amounts of "standard" space become available. The interest of original character properly handled, makes the space under consideration unique at the outset, and the sensitive introduction of

mechanical services at standards comparable to new high rise construction makes possible the enjoyment of the best of modern technology and authentic antiquity.

D. Mechanical System

1. Elevators

Appropriate elevator service is the sine qua non of a quality office building. Elevators operate most effectively in groups, as opposed to isolated as individuals. Elevator access cores have been positioned roughly at the 1/3 points of North and South Rows, within existing structural wall modules. The elevators specified are sufficient insize, speed, and characteristics of operation to provide service competitive with our existing and proposed modern office structures. In addition, they have been designed to serve overlapping areas on each floor so that shifts in tenancy between elevator access cores will not overload or unbalance elevator service. The elevators specified are of underslung design, with hoisting machinery located on the basement level, and their shaftway clearances will not require alteration of the original roof lines in any respect.

2. General Mechanical and Electrical Systems

Because of the nature of the improvements contemplated in this area, and the nature of the structures to be retained and preserved, it is apparent at the outset that mechanical systems of great longevity and flexibility must be considered. Normal office buildings are designed with a life expectancy roughly equivalent to the mortgage, give or take some additional residual life. The multiplicity of operating components of an office building heating and air conditioning system, and the expected widespread changes over the life of the building are normally not considered to be problems, but are undertaken for new tenants on a piecemeal basis as required. Maintenance and operating costs are normally considered to be secondary to low first costs, as they are financed from increased rentals from new tenants and leases.

We believe that the criteria for the general mechanical systems for buildings in this district vary somewhat from those of the standard office building, although the conditions enjoyed by tenants in occupancy would be much the same.

The discussions relative to the general planning of these buildings have shown the desirability of planning on the basis of a full block unit where possible. Mechanically, this implies large simple systems rather than a multiplicity of smaller systems with many more operating components. There is no question that a more efficient operation and lower maintenance are benefits that accrue to a larger scale mechanical system. We believe that a district mechanical system serving all of North and South Market Streets and the Market Building is not only feasible but is desirable from a number of points of view.

While elements of the district system arrangement are discussed in detail in both the H.V. A/C and Electrical Reports, it is appropriate to mention certain salient features in the present context. We propose to construct a complete interconnecting tunnel system serving all buildings and capable of extention to future buildings, carrying all services from a single mechanical plant facility and control area located centrally at the basement level (beneath the great hall) of Faneuil Hall Market. Services proposed include hot and cold domestic water, heating and cooling medium, refrigeration medium where required, sanitary and storm water, underdrainage of basement floor slabs, gas, electrical telephone and signal, with provisions for installation of additional services when required. Heating of tunnels will provide snow and ice melting for all principal sidewalks. All services will be run exposed and accessible in the tunnel, and shall be introduced to all buildings on a modular basis, permitting interchangeability with the tunnel which will not disrupt either occupancy or original and/or reconstructed architectural elements within the building. All servicing and meter reading may be accomplished within the tunnel system without entering upon the premises of any occupant. At the present time, all of the public Utilities have been contacted and the general proposals have been discussed at a number of meetings with engineers representing the Public Facilities Department of the city. All parties contacted thus far have expressed warm enthusiasm for this approach to the area.

It may be noted that unless heating and cooling medium is supplied from a central location, it must be generated within the structures to be restored. The ordinary methods of transferring heat energy from a building to some other medium outside it are incompatible with the architectural frame work of restoration of significant historic buildings.

Historic and architectural criteria would not permit the use of window air conditioning units or rooftop condensing or cooling tower units, and the law prohibits use of City water for this purpose. Investigations have shown that ground water is not available in this district in sufficient quantities to accomplish the cooling job required, that the Quincy Cold Storage Warehouse system does not have the capacity to handle this portion of the job, and that the use of seawater for this purpose is prohibitively expensive due to the lengths and difficulties of the piping systems involved. We therefore propose utilization of sewage effluent, available in sufficient quantity and having desirable temperature characteristics in the immediate area. This central heat exchanger may be viewed as a simple basic component of the district system concept.

III. Faneuil Hall Market Building/Original Design and Existing Conditions

It will be apparent from the Historical Report that Faneuil Hall Market as originally designed was an unusually interesting structure for its time, especially in regard to its engineering technology. Its program called for 50 foot spans throughout the entire second floor with an interior "shopping mall" on the ground floor and individual stores in the basement. This original structure, as substantially upgraded and rebuilt in 1935, is entirely sound and servicable today. The uses which are envisioned for this building would require very little change in the basic structural system, and the architectural systems proposed have to do mainly with improved access through the building between North and South Market Street and more convenient and suitable access to the second floor areas.

The existing mechanical systems within the building are known to be grossly deficient in several important respects, and it is proposed that these existing systems be entirely abandoned and removed and replaced with flexible modern systems as proposed in the H.V.A.C. and Electrical reports and accompanying drawings.

IV. Proposed Reconstruction of Original Market Buildings

The original design by Alexander Parris for the Market District improvements, as discussed in the Historical Report, included one additional building on lots nos. 1 and 2 immediately to the west of Merchants Row on North Market Street. To this original building was added a second contemporary building of identical design, connected by an archway over a historic alley leading into the Blackstone Block. This extremely handsome pair of buildings provided necessary enclosure to the space between Faneuil Hall and Faneuil Hall Market, effectively closing the vista from State Street along Merchants Row, establishing

a focal entry point into the old pattern of streets and spaces within the Blackstone Bock. The various plans for the Waterfront Redevelopment Area have shown at times a proposed site for new development in this location, and we strongly recommend that this site be designated specifically for the reconstruction of this pair of buildings which we believe will contribute significantly to the pedestrian enjoyment and activity of the area, while reinstating the original intent of Alexander Parris' design.

We do not feel that this new construction need occur simultaneously with the rehabilitation and restoration of the existing building, but might well be phased at a later date so that the higher construction costs (estimated at $30 per square foot) could more appropriately be borne through the general success of the operation of the restored district. The focal position of these buildings make them extremely attractive for smaller prestige firms seeking real identity or for such historically oriented civic institutions (Chamber of Commerce, Freedom Trail, Historic Boston, Inc.) seeking a focal position on the Freedom Trail. We believe that is entirely feasible to rebuild these structures at the appropriate time and in the appropriate manner. The district system tunnel along North Market Street would be available to serve these buildings though an extention across the space of Merchants Row.

V. Faneuil Hall

In general terms, we agree with Mr. Whitehill that things which seem to be doing very well on their own should be left entirely alone. No changes are proposed in the physical or operational characteristics of Faneuil Hall, with the exception that should it prove desirable, the Faneuil Hall Market service tunnel could be extended to provide complete services, including air conditioning, to this building.

This concludes the general architectural discussion of the primary district of North and South Market Streets and Faneuil Hall Market and its immediately adjacent historic buildings.

FIGURE #1

NORTH MARKET STREET PASTE-UP PHOTOS

NORTH MARKET ST

FIGURE #2

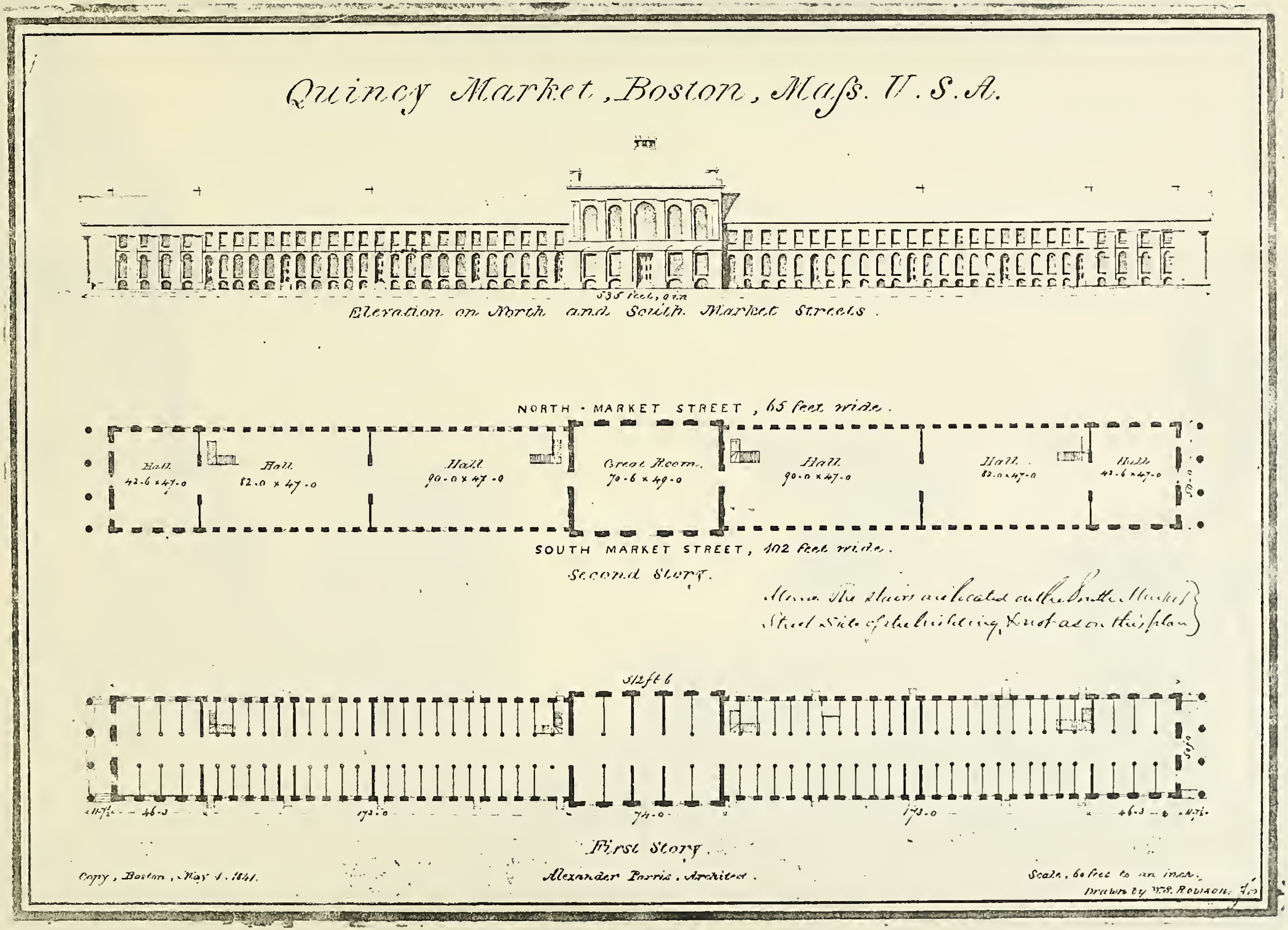
SOUTH MARKET STREET PASTE-UP PHOTOS

SOUTH MARKET ST

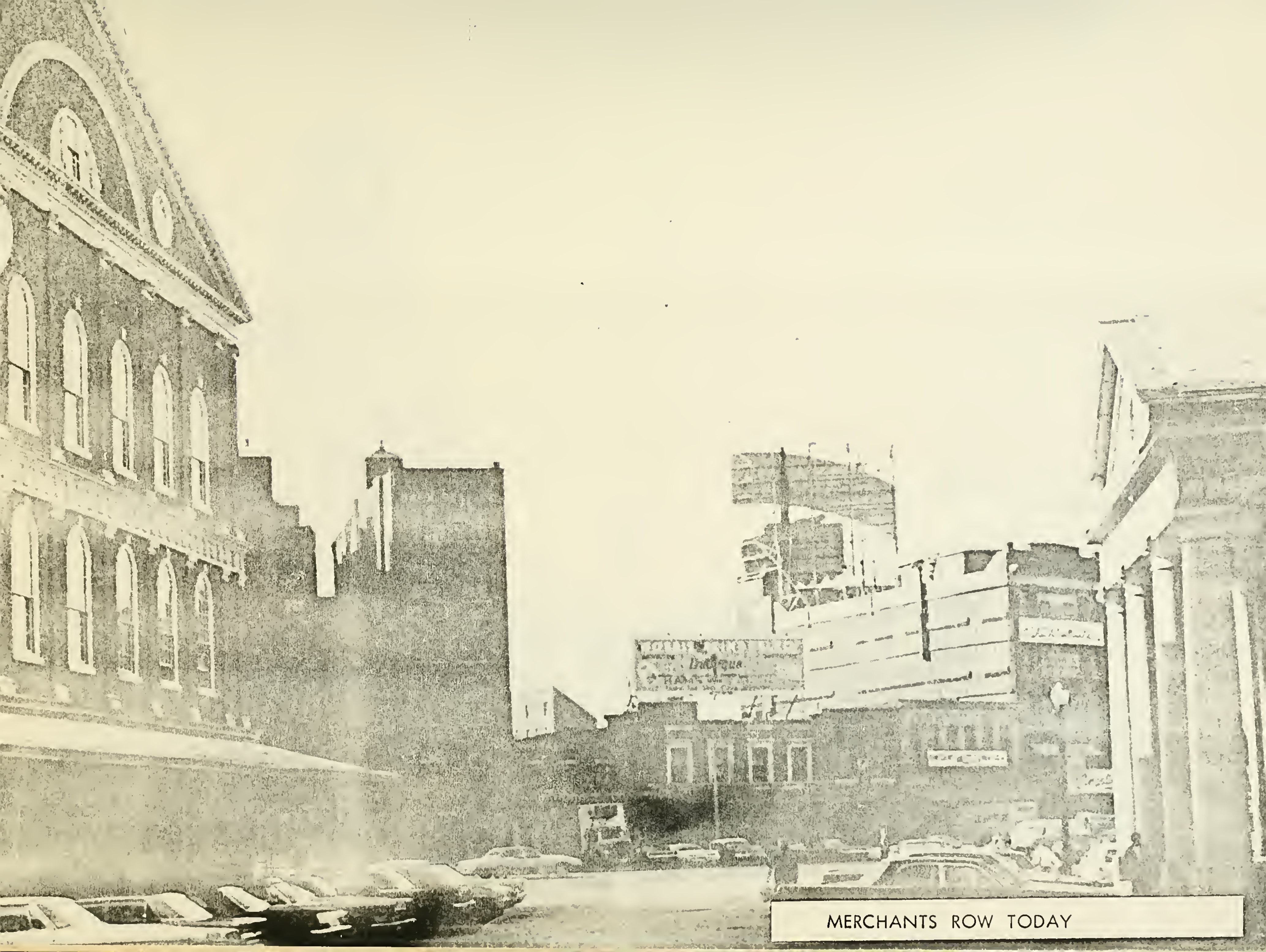
FIGURE #3

CLINTON STREET PASTE-UP PHOTOS

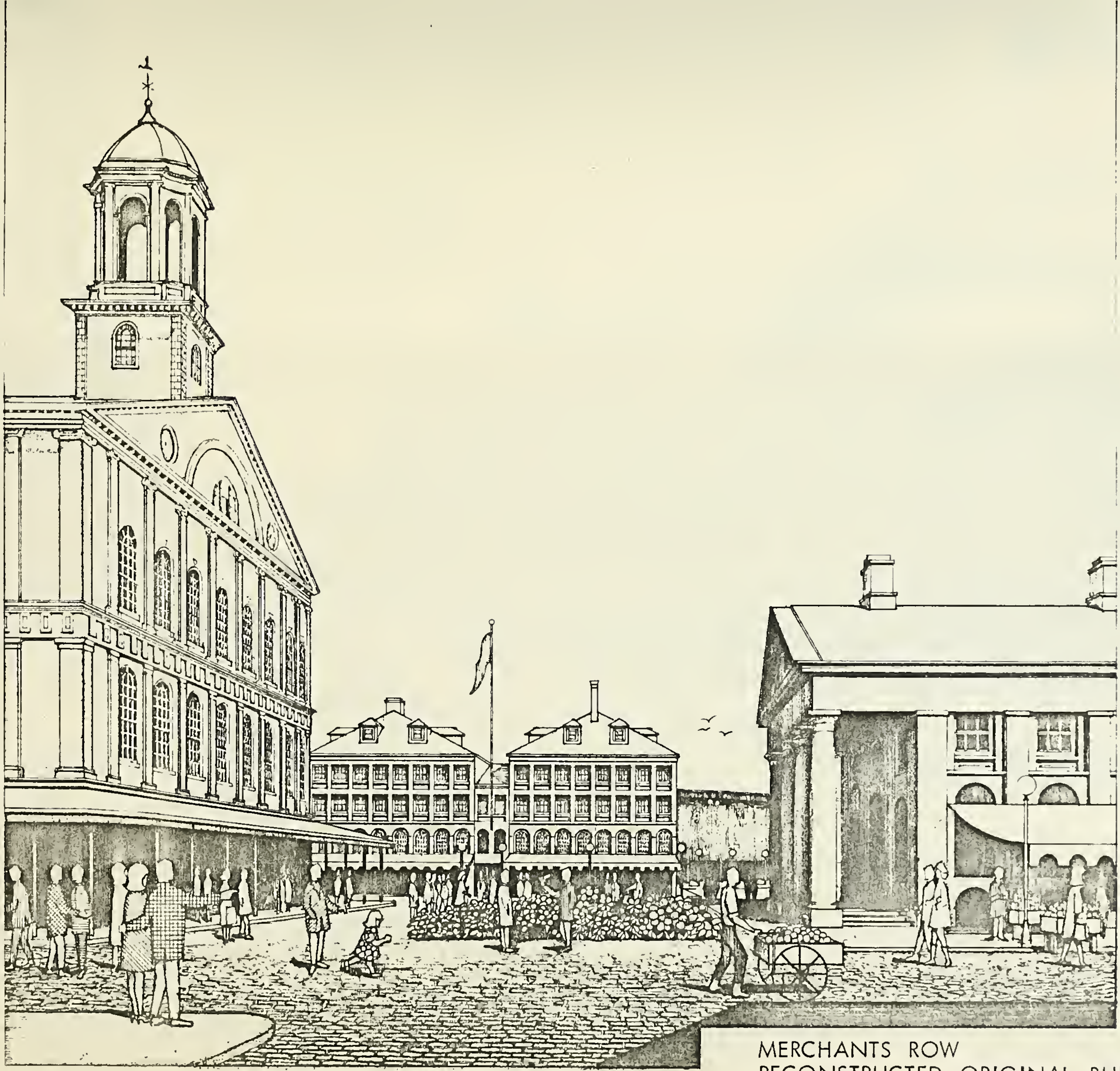
NORTH MARKET REAR


Quincy Market, Boston, Mass. U. S. A.
535 feet, 9 in
Elevation on North and South Market Streets.
NORTH · MARKET STREET, 65 feet wide.
Hall 42.6 x 47.0
Hall 82.0 x 47.0
Hall 90.0 x 47.0
Great Room. 70.6 x 49.0
Hall 90.0 x 47.0
Hall 82.0 x 47.0
Hall 42.6 x 47.0
50.0
SOUTH MARKET STREET, 102 feet wide.
Second Story.
Mem. The stairs are located on the South Market Street side of the building & not as on this plan
512 ft 6
50.0
11.7½ — 46.3 — 173.0 — 74.0 — 173.0 — 46.3 — 6 — 11.7½
First Story.
Copy, Boston, May 4. 1841.
Alexander Parris. Architect.
Scale, 60 feet to an inch.
Drawn by W.S. Robison

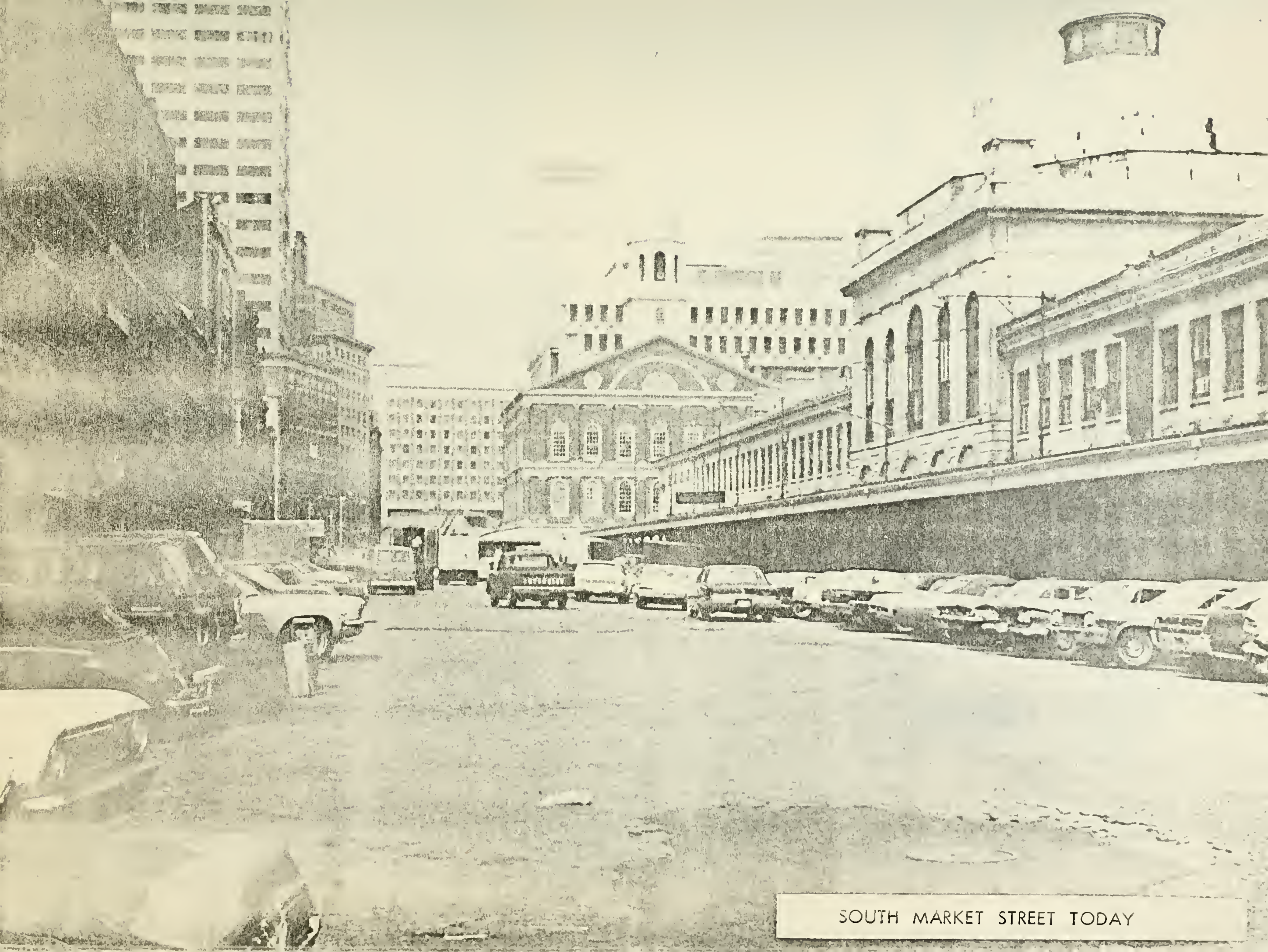
ORIGINAL PLANNING OF
FANEUIL HALL MARKET



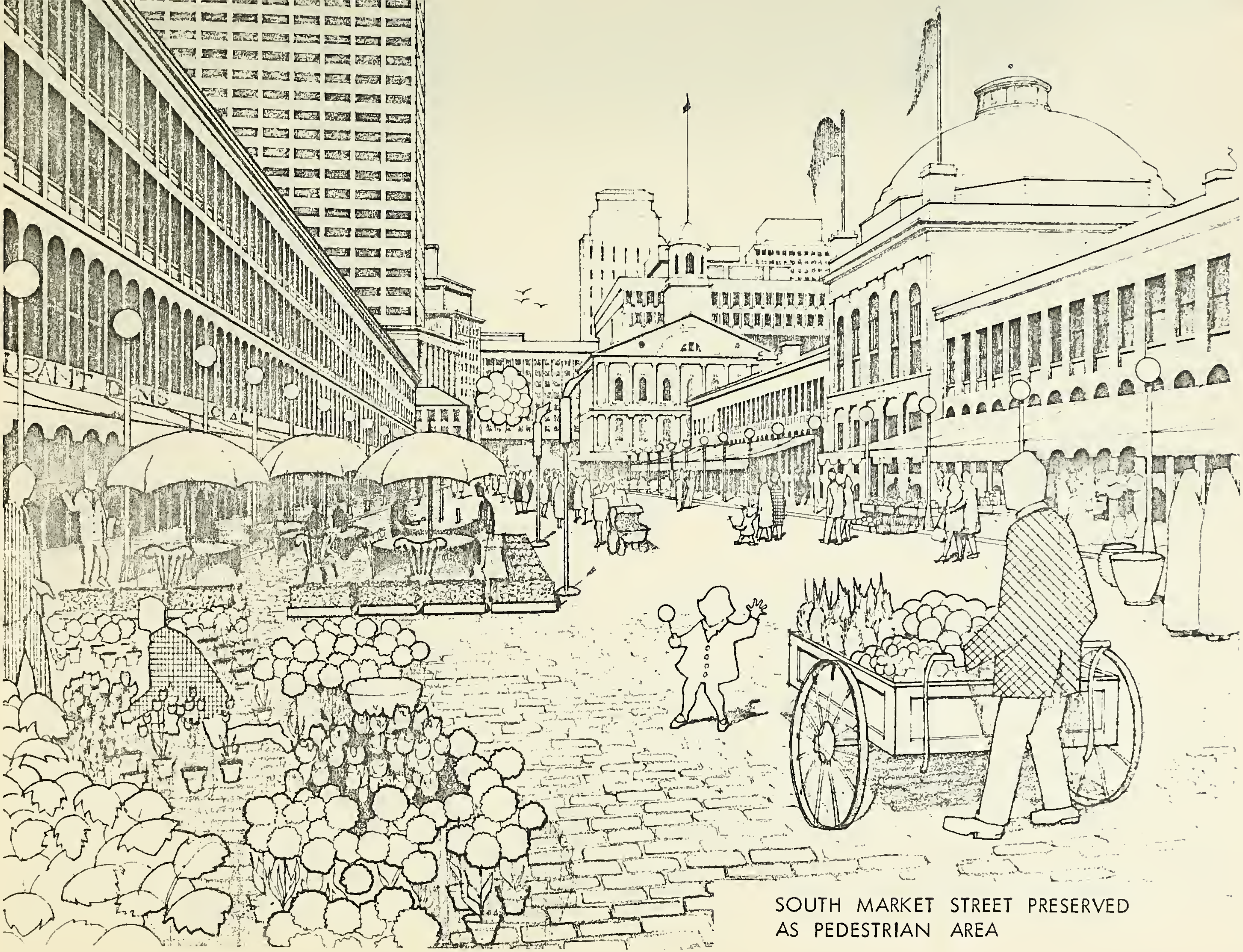
MERCHANTS ROW TODAY



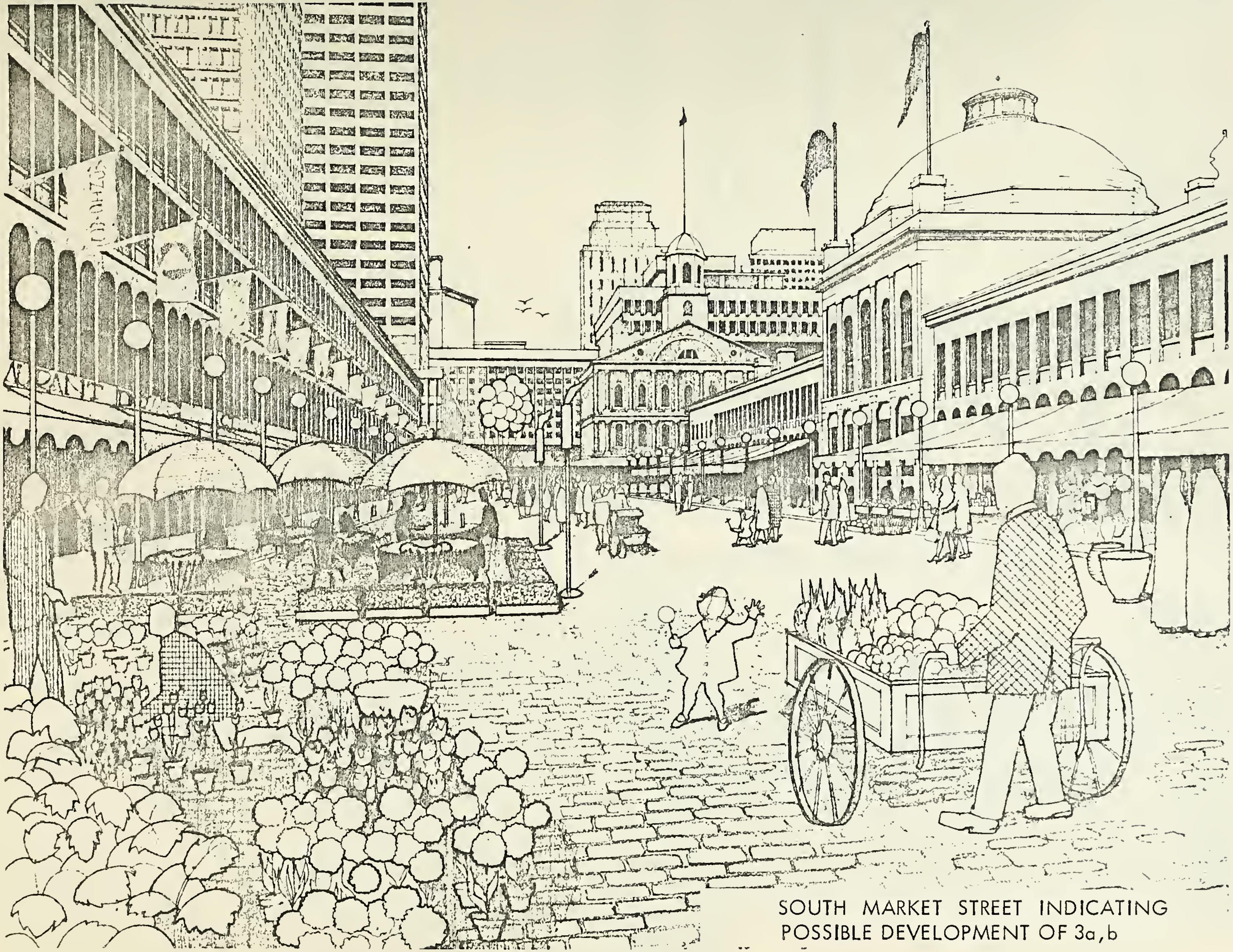
MERCHANTS ROW
RECONSTRUCTED ORIGINAL BUILDINGS



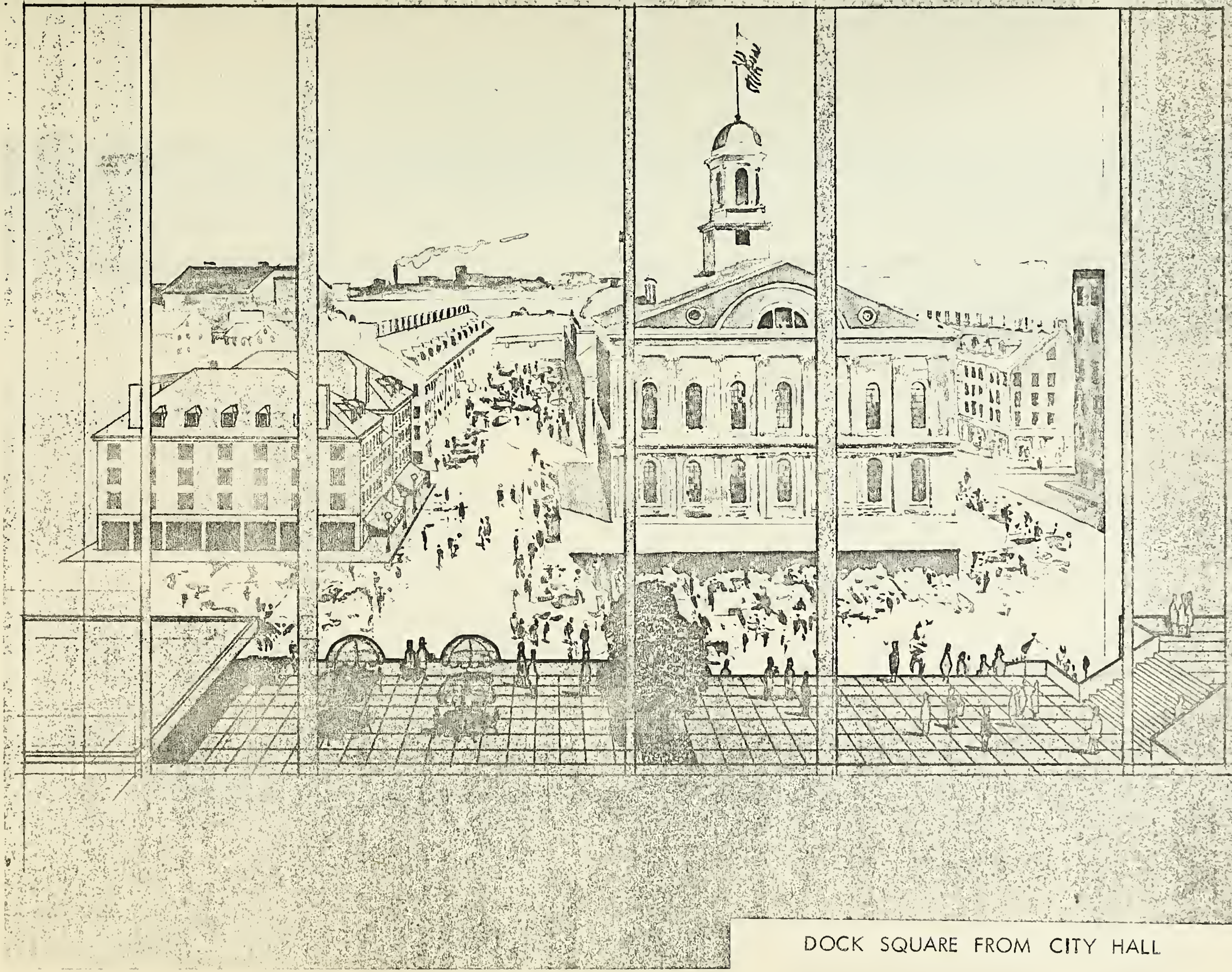
SOUTH MARKET STREET TODAY



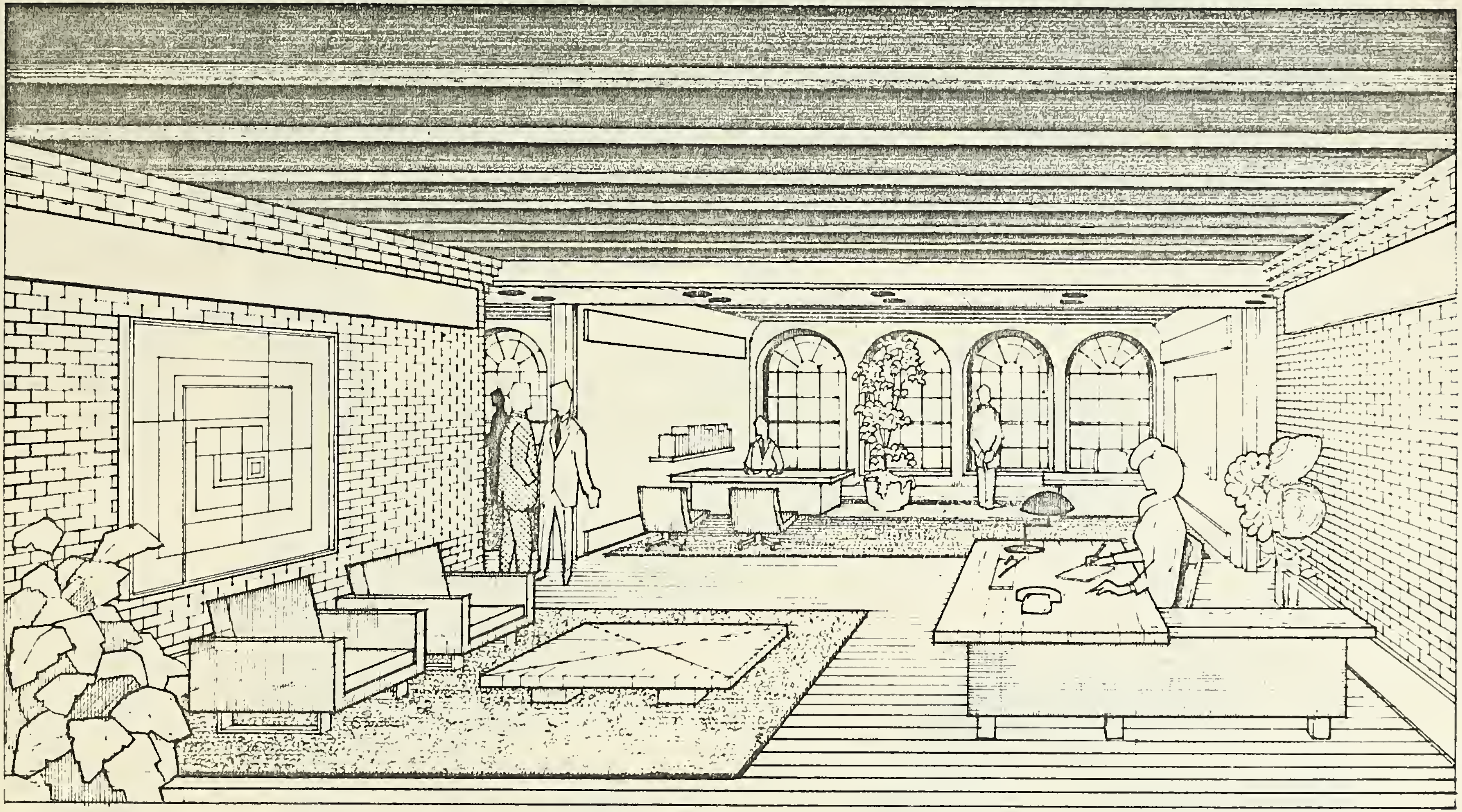
SOUTH MARKET STREET PRESERVED
AS PEDESTRIAN AREA



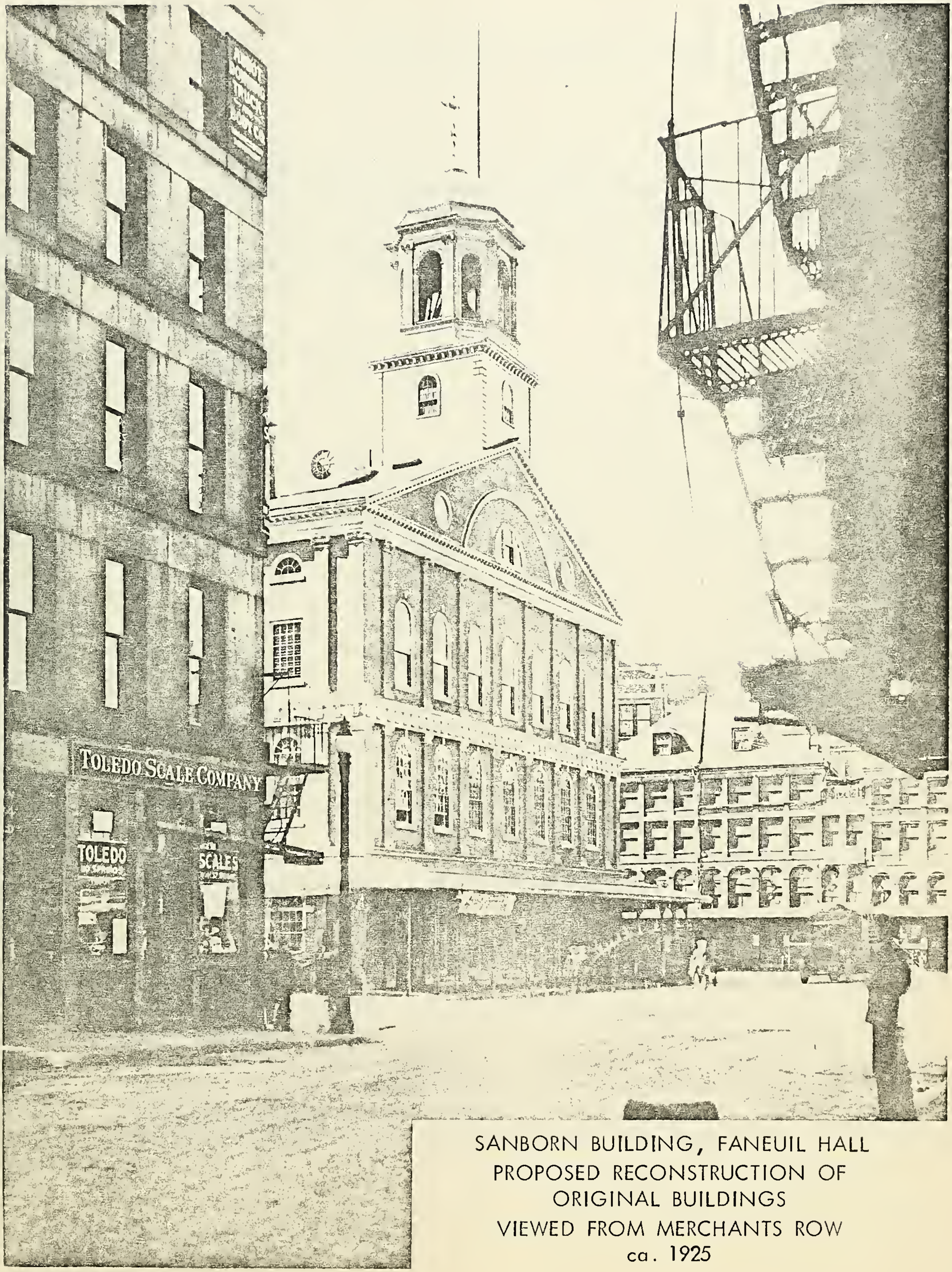
SOUTH MARKET STREET INDICATING
POSSIBLE DEVELOPMENT OF 3a,b



DOCK SQUARE FROM CITY HALL



TYPICAL OFFICE INTERIOR SOUTH MARKET ST.



SANBORN BUILDING, FANEUIL HALL
PROPOSED RECONSTRUCTION OF
ORIGINAL BUILDINGS
VIEWED FROM MERCHANTS ROW
ca. 1925

Site 1b, also recommended for new construction, being restricted in area and clearly embedded in a block frontage should be considered primarily as undifferentiated office space, suitable for a single occupancy owner/developer, and the prime concern here is a sympathetic relationship of facade and roof line to maintain the integrity of the North Street frontage on Dock Square. (Refer to Digest of Controls.)

II. GOVERNMENT CENTER

Immediately to the west of Union Street is the curving screen facade of the proposed office building which forms the Easterly end of the Government Center Development. This building in turn links to the proposed new hotel in the block bounded by Hanover, Congress, New Sudbury ond Blackstone Streets, which also incorporates the MBTA Station. The presently proposed office block should be effective in restoring the scale of Union Street and contributing to an intimate and active use of the existing Union Street frontage and Blackstone Block interior pedestrian areas. Appropriate retail uses of the Union Street ground floor level will enhance the continuity and activity already present. The termination of the office building at the intersection of North Street and Union Street, as presently planned, however, tends to emphasize a separation of the Blackstone area from the Market District, and fails to take advantage of a strong potential of unifying these two districts along the Union Street line, and of contributing a greater enclosure of the unformed open space between North Street and Faneuil Hall.

We recommend that consideration be given to an extension of the office building (indicated as Parcel 2 in the Market District Planning Map) at its present height or a lesser height to end on the front line of North Market Street Row extended West. This modification will overcome the present strong division of the Blackstone Block from the Market District without blocking the dramatic North Market Street view of the New City Hall.

In response to the problems of vehicular noise, visual confusion and distraction which we believe are inherent in the proposed widened Congress Street (± 4' below Dock Square grade), we concur with Mr. Kallman's suggestion of terrace levels rising up to the road edge and forming a series of steps for pedestrian lounging and lunching, facing the Adams statue and the facade of Faneuil Hall. The change in ground level would screen the road, convey the old scale of Dock Square and from a useful pedestrian area which at the same time allowing the vital confrontation of the New City Hall and Faneuil Hall.

We recommend that the pedestrian overpass at Congress Street be scaled down in width so as to make less of a dent in the available development Parcel 3b and to leave more of Dock Square usable on ground level. The pyramidal step arrangement would presumably be tied into the step levels along Congress Street and up Congress Street to State.

Brick paving should terminate at the original ground level of Dock Square so that the rich, granite patterns of the Market District may meet the Government Center at a clear and logical point of departure.

We feel that the only difficulty presented in these Dock Square recommendations is the possible reluctance of the office building developer to extend his building. On the other hand, we feel that present proposals from this developer are not architecturally sympathetic to either the Government Center, Blackstone Block or Dock Square, and the project should not be encouraged to proceed in its present design in any event.

III. STATE/CONGRESS

It is now apparent that the traditional axis of State Street as the spine of the prime core office district has shifted to Congress Street, having rotated some ninety degrees around the intersection of Congress and State. The traditional focus of the Old State House has remained, and has been strengthened considerably with the development of the new Merchants Bank Tower and the Boston Company Building. This focal point, involving all of the corner sites which abut Congress, Devonshire, Washington, Court and Washington Mall will continue to intensify in development, and available information indicates that sites 3a and b (bounded by State, Congress, South Market Street and Merchants Row) will be the site of another major high-rise tower in the foreseeable future. It is probable that additional sites to the South of State Street (between Washington and Kilby) will be promoted for similar types of development.

The developments between High and Franklin Streets, and Oliver and Federal Streets are likely to establish Congress Street as the new prime core office spine, and it is unlikely that major office construction will occur to the East of Kilby Street or Merchants Row on lower State Street. In addition to the polarity created between State/Congress (New England Merchants National Bank) and Franklin/Congress (First National Bank) the street pattern and the dimensions of available parcels would tend to block any major high-rise office developments. We therefor see Parcels 3a and b forming a relatively permanent boundary between a dense high-rise office core surrounding the old State House and State/Congress, and the Dock Square and Faneuil Hall Markets District and lower State Street.

We believe that this entire block should be developed as a coordinated unit, with the preservation of the existing Sanborn Building at the corner of Merchants Row and South Market Street. This is an exceptionally fine building of flush jointed cut granite which, in addition to its architectural /engineering and historical significance, forms a clean sharp edge in conjunction with the line of South Market Street Row. We recommend that Parcel b be enlarged to recreate the original street line parallel to South Market Street in the Market District and projecting somewhat in front of the existing line of South Market Street Row. This realignment clarifies the original relationship of buildings and spaces, and is most important in recognition of the fact that the alignment of buildings and spaces derived from the original alignment of Faneuil Hall itself.

We believe that the assembly of 3a and b as a development parcel will make it possible to justify a height of building on 3b compatible with the historic buildings and spaces of which it is a component. We feel that Parcel 3a is of sufficient size to support a high-rise office tower in the one million square feet class which will relate strongly to the existing developments in the immediate vicinity of the old State House. (See Digest of Controls.)

IV. LOWER STATE STREET

The Parcels noted 4a, b, and c on the Market District Planning Map, bounded by State, Merchants Row, Chatham Street and Commercial Streets, form a link between the dense high-rise office district at State /Congress and the spacially and architecturally rich setting of the Custom House Tower. As has been previously mentioned, there is no immediate pressure for prime office space development in this Parcel. We do believe, however, that development of this Parcel will be a reasonable proposition early in the productive life span of the Market District improvements. The heterogeneous collection of sites and buildings and the need to improve the lower State Street alignment near its intersection with India Street make this redevelopment desirable; we believe that the successful operation of the reconstructed Market District, together with the development of Parcel 3a, b and the continued strength of the Custom House District will make it possible. The diverse influences on this block suggest a diversified development, both in uses and physical form. We believe that it is practical to consider office, residential, commercial and entertainment uses within a single multi-use structure, or series of structures. As in the case of 1a, the ground level should be largely open to pedestrian activity and access through the block, and the height controls should guarantee a smooth transition from the existing ten story office buildings between Broad and India to the high-rise development of Parcel 3a. (See Digest of Controls.)

V. CUSTOM HOUSE DISTRICT

The group of buildings and spaces which form the Custom House complex is the late nineteenth century equivalent of the Blackstone Block. There is perhaps no better or richer expression of the breadth and development of nineteenth century commercial architecture anywhere in this or other cities. The Custom House itself, with its original robust late Greek Revival form now capped by a remarkable early skyscraper tower (the first in Boston) forms the forces of this area. The surrounding buildings and sites are as follows: Site 4a; Site 5a; The State Street Block, a fine example of the larger scale late nineteenth century granite warehouse; Central Wharf, attributed to Bulfinch; the Grain Exchange, a landmark due to its vast conical roof and excellent Richardsonian granite work; Patten's Restaurant building contemporary in style and date with Central Wharf; 40 Broad Street, a fine Edwardian office building of first quality; and the Board of Trade Building of the same era but showing a contrasting style.

Not only are these buildings individually prime examples of their period in both form of development, architectural design and engineering technology, but as a group they form a district of remarkable dignity and strength of character.

We regret that the planned development of Commercial Street into a four lane divided arterial street at grade will do substantial damage to the potentially great pedestrian amenities of this area, and its present authentic architectural character, and we strongly recommend that this be reconsidered if at all possible. In the event that the present street plan must be carried through, the end section of Central Wharf, a superb late Federal structure, should, if possible, be moved backward so as to continue to form the end of the linear wharf structure for which it was designed.

The development of site 5a and/or b (presently designated for new construction by the B.R.A.) relates strongly to both the Custom House District and the Market District. As a consequence of the South Market Street pedestrian route from the Government Center to the Maritime Park at the waterfront, it is anticipated that upwards of one million people per year will traverse site 5a at ground level. A development on this parcel would enjoy fine views of harbor activity, Market District activity, and the Custom House District itself. We believe that it is practical to limit such development to a height and bulk which conforms to the older office buildings between Broad and India Street at State Street, and the interest of developers already recorded has been in the scale of ten to twelve stories at this location. We further believe that with an extension under the artery to site 5b sufficient parking can be generated to make this an attractive location for specialized office tenants including the design professions (potentially on a condominium basis), and that the intense pedestrian ground level activity should generate several public activity levels carried under to overcome the barrier of the artery. (See Digest of Controls.)

URBAN DESIGN CONTEXT OF THE FANEUIL HALL MARKETS DISTRICT

The Faneuil Hall Markets District has strong potential as a unique pedestrian area of intense and diversified activity at all hours and serving as a specialized focus for both the surrounding area and the metropolitan region. As such, it has the potential of strengthening and giving character to the areas which surround it. The general planning recommendations for this area give consideration to the unique character of the historic core, and also to the varying characteristics of the sites and districts which provide its setting and relationship to the downtown.

I. BLACKSTONE BLOCK

The Market District is strongly related physically and by historical association to the group of buildings presently known as the Blackstone Block, bounded by Union Street, Hanover Street, Blackstone Street and North Street. This is a district which has retained an earlier street pattern and several individual buildings of historic value and architectural importance, and in general possesses a uniquely diversified and interesting character and series of buildings and spaces.

On the North Street frontage two sites have been acquired by the B.R.A., and have been given consideration for both rehabilitation and/or demolition and reconstruction. These sites are designated 1a and b on the Market District Planning Map. These sites were acquired by the B.R.A. because of their lack of architectural and historical significance, and because of the small, irregular and difficult parcels and buildings of which they are composed.

The desirability and especially the cost/feasibility of a meaningful rehabilitation of these buildings seem very doubtful, and we recommend that 1a be established as a site for demolition and reconstruction with suitable controls. (Refer to Digest of Controls.)

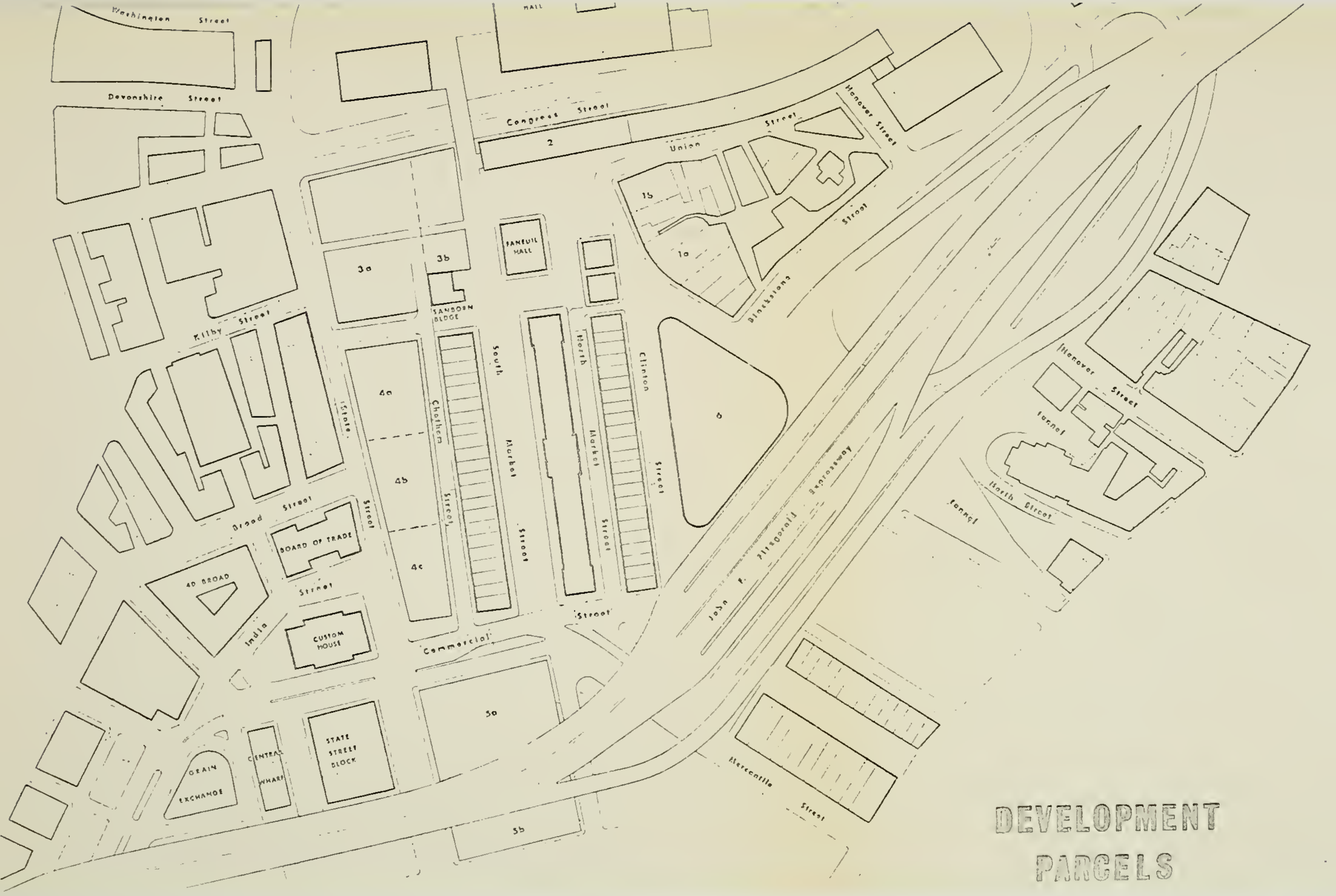
The functional importance of site 1a is its ability to link the interior spacial sequence of the Blackstone Block with the functional open spaces of the Market District, its large and relatively simple potential floor area, and its potential to strengthen the architectural framework provided by North Street. We feel that these elements combine to suggest a form of development that is largely open to pedestrian flow on the ground level and is therefor suitable for covered outdoor activities such as exhibitions, entertainments and overflow from upper public levels and that the upper levels be considered as prime opportunities for theater and cinema uses, together with restaurant, gallery and the like. It may be possible to incorporate some specialized exhibition space and/or office space such as that proposed by the Heritage Center, Inc. of Boston.

VI. JOHN F. FITZGERALD EXPRESSWAY

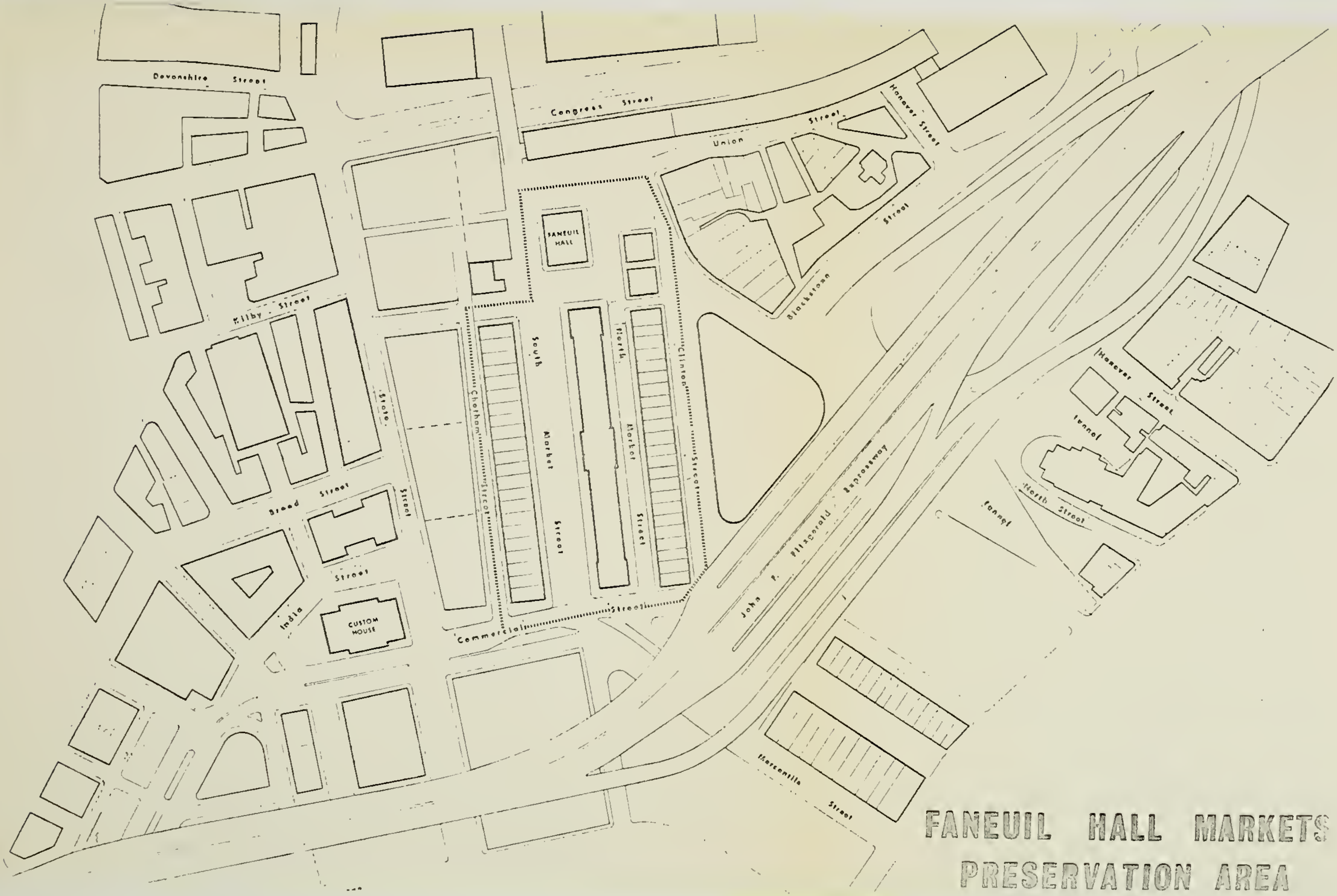
The John F. Fitzgerald Expressway should be viewed as an obstacle to be overcome in the relating of the Market District to the proposed civic and public waterfront center to the East, and the proposed new and rehabilitated residential district to the Northeast. The major ground level route down South Market Street has already been mentioned, but we believe it equally important to enhance the accessibility from the residential neighborhood to the Market District in any way possible. We urge in the strongest possible terms opposition to any proposals to broaden or increase this overhead road system. We believe that in the productive lifetime of the improvements under discussion alternatives may be found to this form of road development.

VII. DEVELOPMENT PARCEL 6

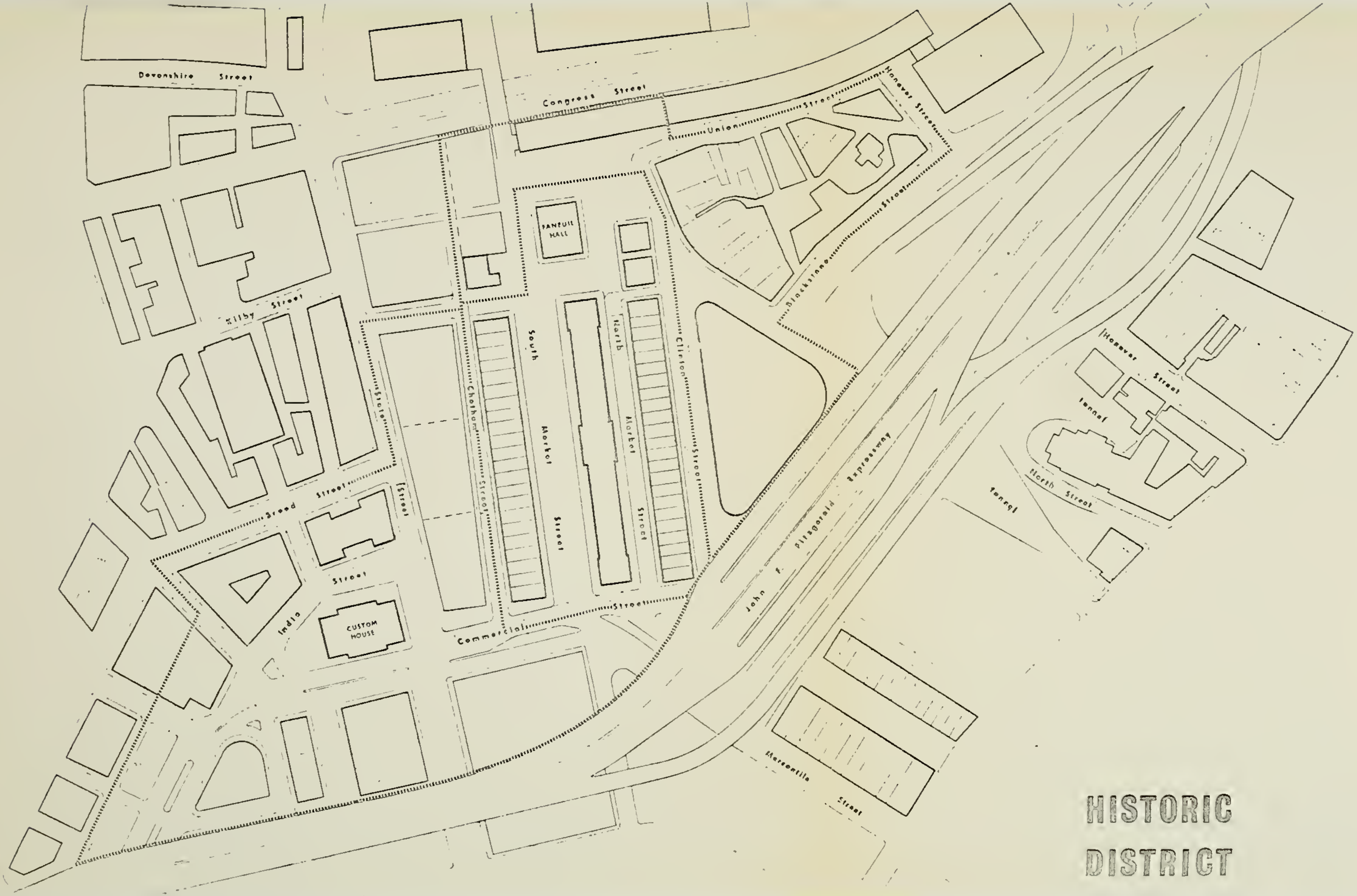
The proposed parking structure (Development Parcel 6) bounded by Clinton Street, North Street and the Fitzgerald Expressway should be viewed as a vital functional element of the development under consideration. We strongly urge the relocation of the North Street ramp to permit a substantial enlargement of the present development parcel. This will permit the retention of street scale where the proposed garage will adjoin the North Street frontage of the Blackstone Block, and will permit the development of a meaningful amount of parking within a height and bulk consistent with adjoining historic structures on Clinton and North Streets. From an Architectural and Urban Design point of view this building is of the greatest importance in the enhancement of the pedestrian scale and the architectural content of the District; from a development and management point of view it is a vital component in the successful operation of a revitalized Market District.



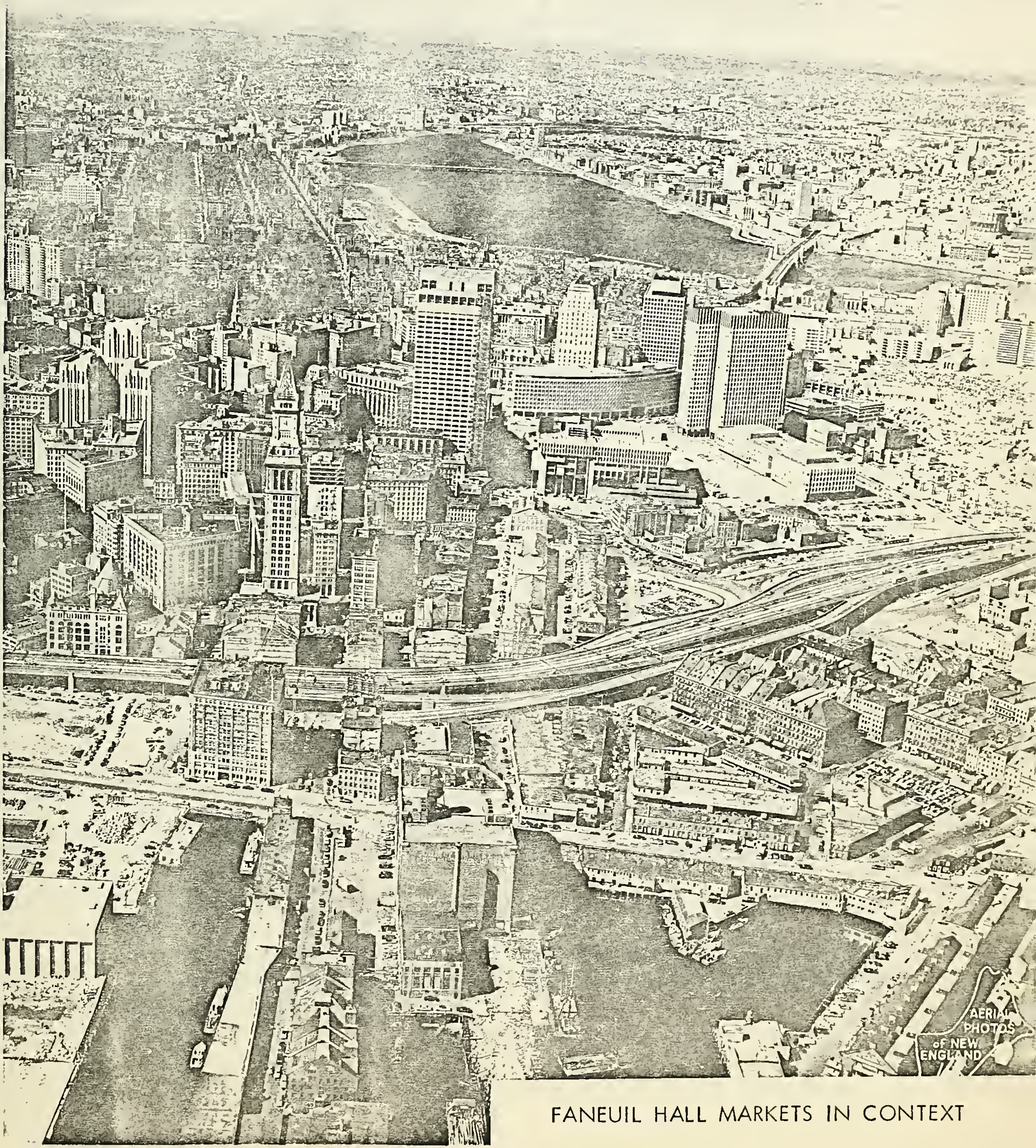
DEVELOPMENT PARCELS



FANEUIL HALL MARKETS
PRESERVATION AREA



HISTORIC DISTRICT



FANEUIL HALL MARKETS IN CONTEXT

PEDESTRIAN AND VEHICULAR CIRCULATION SYSTEMS

In our view, the success of the redevelopment envisioned in this report is to a large extent dependent upon the nature and character of pedestrian circulation. This is especially borne out in the real estate and marketing sections.

Two basic elements must be considered.

1. Pedestrian circulation per se, involving existing patterns and their logical extensions through this area; and

2. Pedestrian circulation relative to vehicular circulation.

To deal with the simpler aspects first, we believe that the superblock formed by State Street, Congress Street, New Sudbury Street, Blackstone Street enlarged, and Commercial Street may be kept free from all but vehicular service traffic and authorized access traffic. The improvements being made to the circumferential streets (many of which are four lane, divided) should make it possible to exclude general traffic from this area, which, in any event, has no street pattern adequate to accommodate this traffic. In addition, any effort to make accommodation for through traffic will work directly in opposition to the goals of real estate and marketing and of pedestrian activity as envisioned.

In accordance with this view, we recommend the following:

Service streets open to the public:

1. Merchants Row from State to Chatham; Chatham from Merchants Row to Commercial Street.

   This system will serve the future development of 3a and b, and 4a, b, c as well as the Sanborn building and South Market Street building.

2. Hanover Street, Blackstone Street, North Market Street, Union Street.

   This circumferential circulation of the Blackstone Block provides for pickup and dropoff of pedestrians at the many restaurants and entertainment functions contained within the block.

We recommend that this block be considered as a unit from a strictly service point of view and that the truck loading and unloading facilities be created on the Blackstone Street frontage after the transfer of the outdoor market activities into the heart of the district.

The formation of service cul de sacs off Blackstone Street should be adequate for the interior servicing of the entire block, allowing for offstreet loading and unloading, and permitting unimpeded convenient general traffic access to facilities fronting on North Street, Union Street, and Hanover Street.

3. Clinton Street, North Street, Commercial Street.

This loop will furnish service and access capability to the North Market Street buildings and commercial establishments operating on the Clinton Street frontage of the parking structure. The access and egress from the parking structure should occur on North Street opposite Blackstone Street, and should under no circumstances occur on Clinton Street or sufficiently near to Clinton Street to interrupt convenience access for pedestrian drop-off and pickup along the frontage.

The above groups of streets will be open to the public at all times and will constitute a system of service streets, in the normal sense of the word.

In addition to this system, it is recommended that limited access, under strict management supervision, be permitted into North Market Street connecting with Clinton Street at the westerly end, on the Merchants Row alignment.

It is anticipated that this circulation will be required for valet parking of restaurant patrons, rubbish removal after hours and the like. It should be emphasized that this is in no way a public street and it is to be controlled by management.

The remainder of the area, consisting of South Market Street, Commercial Street to Congress Street, Dock Square, North Market Street from Merchants Row to Congress Street, and Merchants Row from Clinton Street to North Market Street, shall be pedestrian area solely, with the single exception of ceremonial functions undertaken by the City or other agencies requiring utilization of the street for parades, civic festivals and the like.

From the urban planning and architectural viewpoint, the open spaces of the district, both existing and proposed, have always been streets. The nature and disposition of the buildings thoroughly reflects this. We believe that it would be wrong to entertain thoughts of terracing, major planting, or other design elements which would tend to destroy the street quality which is basic to the entire architectural and planning scheme.

We believe that the proper segregation of traffic can be easily managed in the manner described above, partially by physical barriers of a permanent nature, such as bollards and the like, and partially by a management function. This permits the retention of the street character in the entire district, and also permits use of the street in a variety of ways.

The Real Estate and Marketing Report suggests a number of traditional street uses for retailing as well as the potential for outdoor drinking and dining. On the other hand, it remains possible to clear the entire street, for parades, concerts, civic festivals and commemorative events, all having a substantial historic association with the area.

Pedestrian Circulation

It will be inferred from the above, that pedestrian circulation will normally be unimpeded from the Congress Street line to Commercial Street and between Clinton Street and Chatham Street.

Pedestrian circulation relating this district to its environment may be considered as a number of associated components.

Component One: "The Route to the Sea"

This circulation system relates the pedestrian routes of Government Center (along the front of Sears Crescent and intersected by Washington Mall), spanning Congress Street and continuing down South Market Street to its ultimate destination at the waterfront park. This route is accommodated by the proposals to the point of its intersection at the widened and divided Commercial Street, where a direct ground level conflict is presented. We are informed that Commercial Street must be on grade at this point, but it is clear that a substantial improvement would be obtained by accommodating Commercial Street below grade. This might also help to overcome some of the unfortunate influences of Commercial Street in the Custom House area. Beyond Commercial Street, Parcels 5a and 5b must accommodate a large pedestrian flow, as mentioned previously.

Component Two: Access from Commercial Center

It is anticipated that large numbers of persons employed in the downtown area will desire easy pedestrian access to the area. The area to the south of State and to the west of Devonshire Street will probably find the Washington Mall and Congress Street overpass the most convenient access; those to the south of State and east of Devonshire will most probably use State Street and those north-south streets which intersect it; Congress, Kilby, Broad, and India.

We suggest that Change Avenue, (connecting State to Dock Square) be retained in any development of Parcels 3a and b, so as a historic and still meaningful pedestrian route may be revitalized. In addition, we have shown the need for multiple accesses through the block from State to Chatham Street, roughly tying in to Broad and India Streets. As previously mentioned, the ground level of Parcels 4a, b, c might well be very permeable to pedestrians.

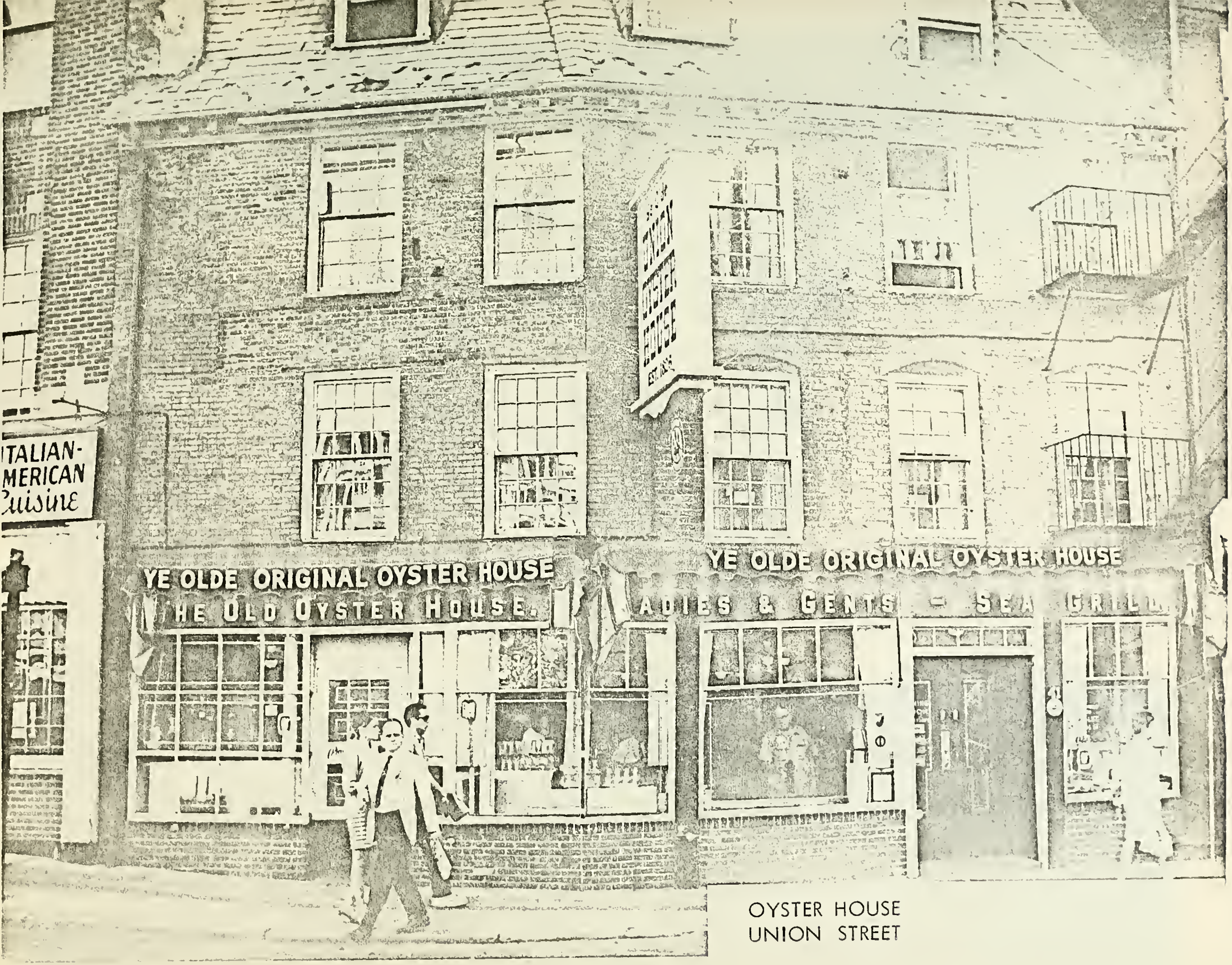
In addition to these offstreet pedestrian routes, Merchants Row will form the major and architecturally significant entrance to the area for pedestrians. It is proposed that in a new development of either or both sides of Merchants Row its alignment be eased to 90° to South Market Street.

The office building lobbies in South Market Street (at the 1/3 points) are intended to function as through, covered accesses to accommodate pedestrian flow north-south into South Market Street.

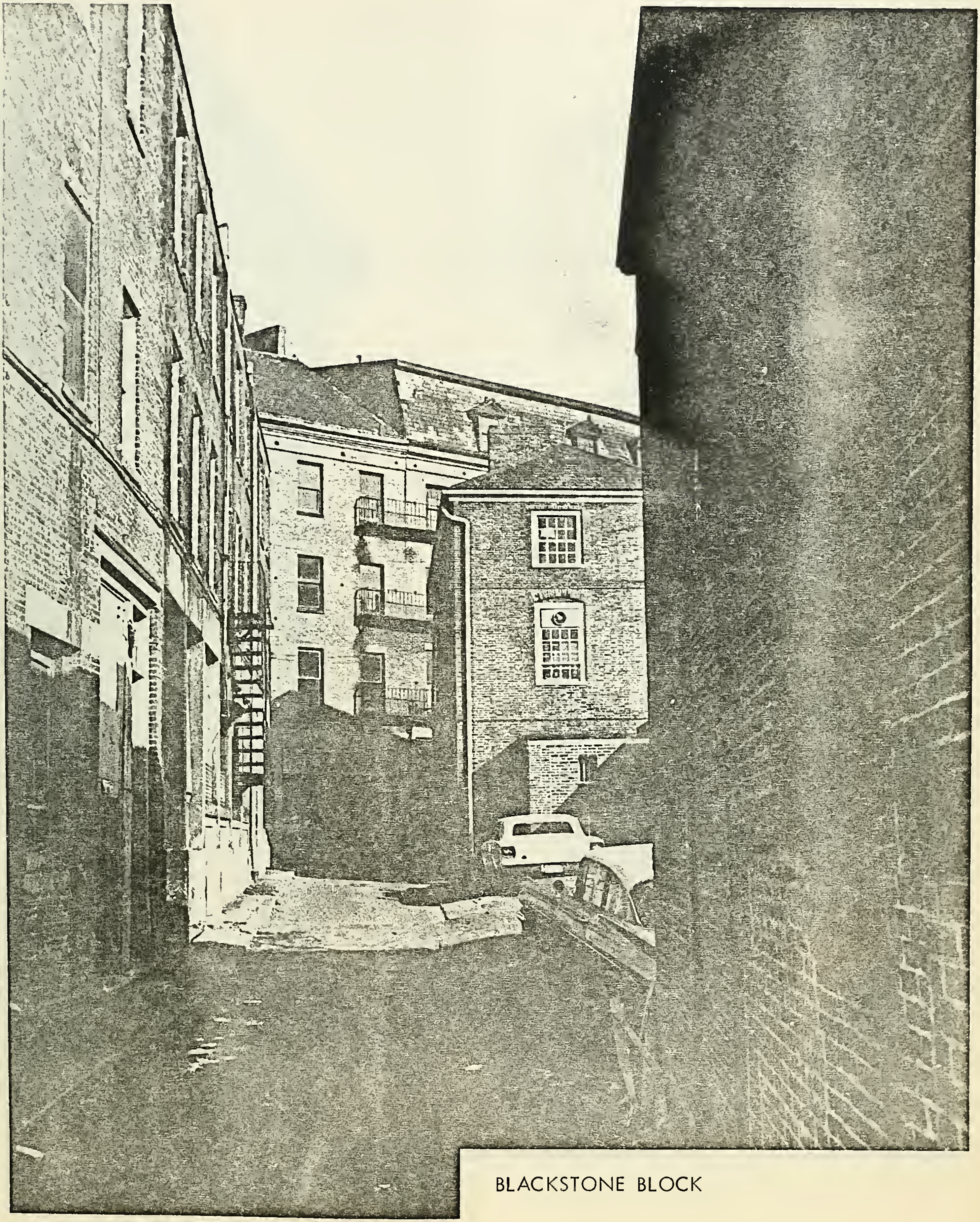
The multiple through accesses of the Market building permit a rich filtering of pedestrian traffic through the building between North and South Market Streets; the office building lobbies of North Market Street will act as covered pedestrian access to this block from Clinton Street.

Component Three: Blackstone Block

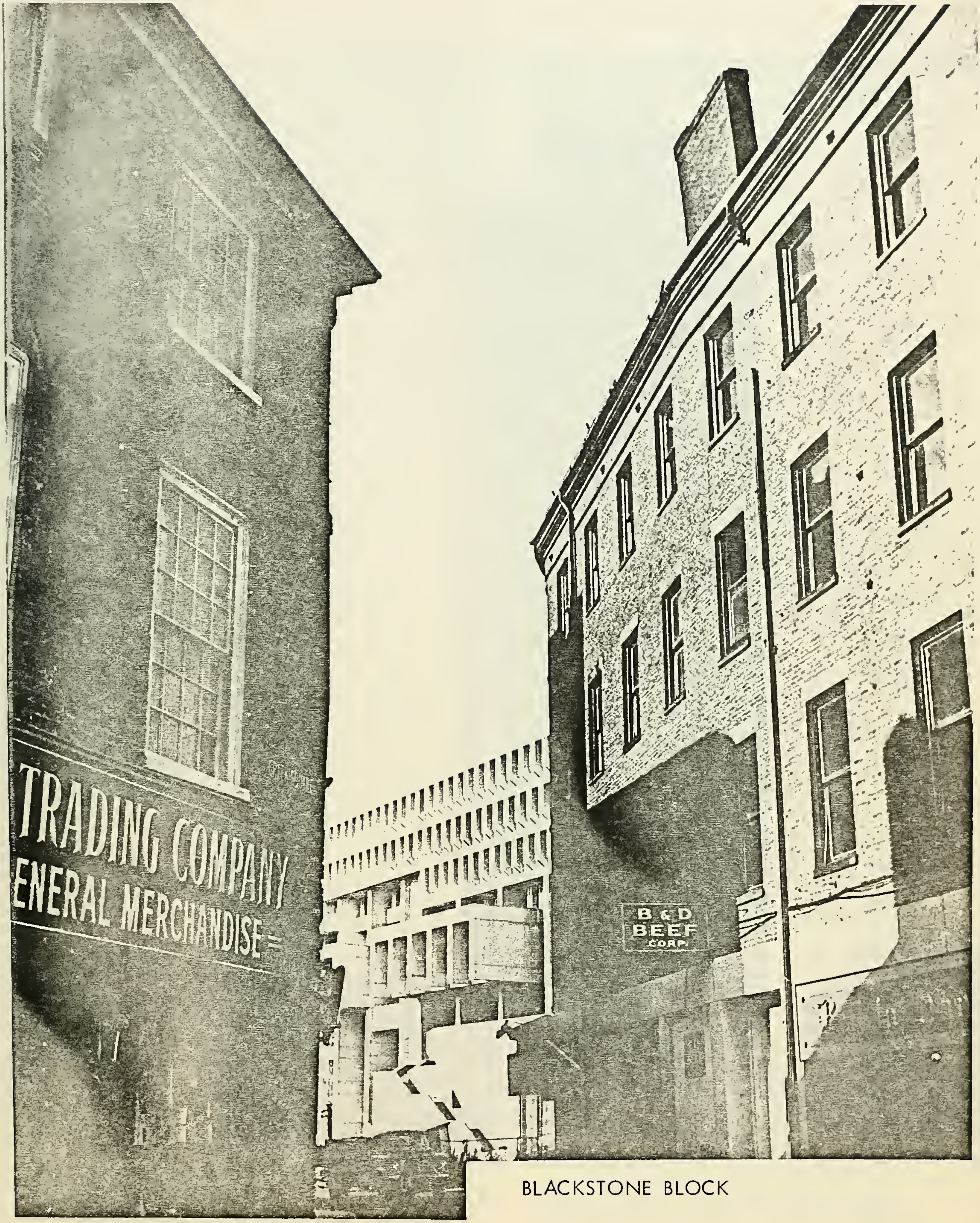
This connection ties in directly with the proposed reconstruction of original buildings now removed, and the redevelopment of Parcel 1a. It would form a connecting pedestrian route from the open space between Faneuil Hall and Faneuil Hall Market, through the archway and through Parcel 1a into the complex interior spaces and activities of the Blackstone area. This route relates very strongly to the major access of Merchants Row as mentioned.


ITALIAN-
MERICAN
Cuisine
YE OLDE ORIGINAL OYSTER HOUSE
HE OLD OYSTER HOUSE
UNION OYSTER HOUSE
YE OLDE ORIGINAL OYSTER HOUSE
ADIES & GENTS — SEA GRILL

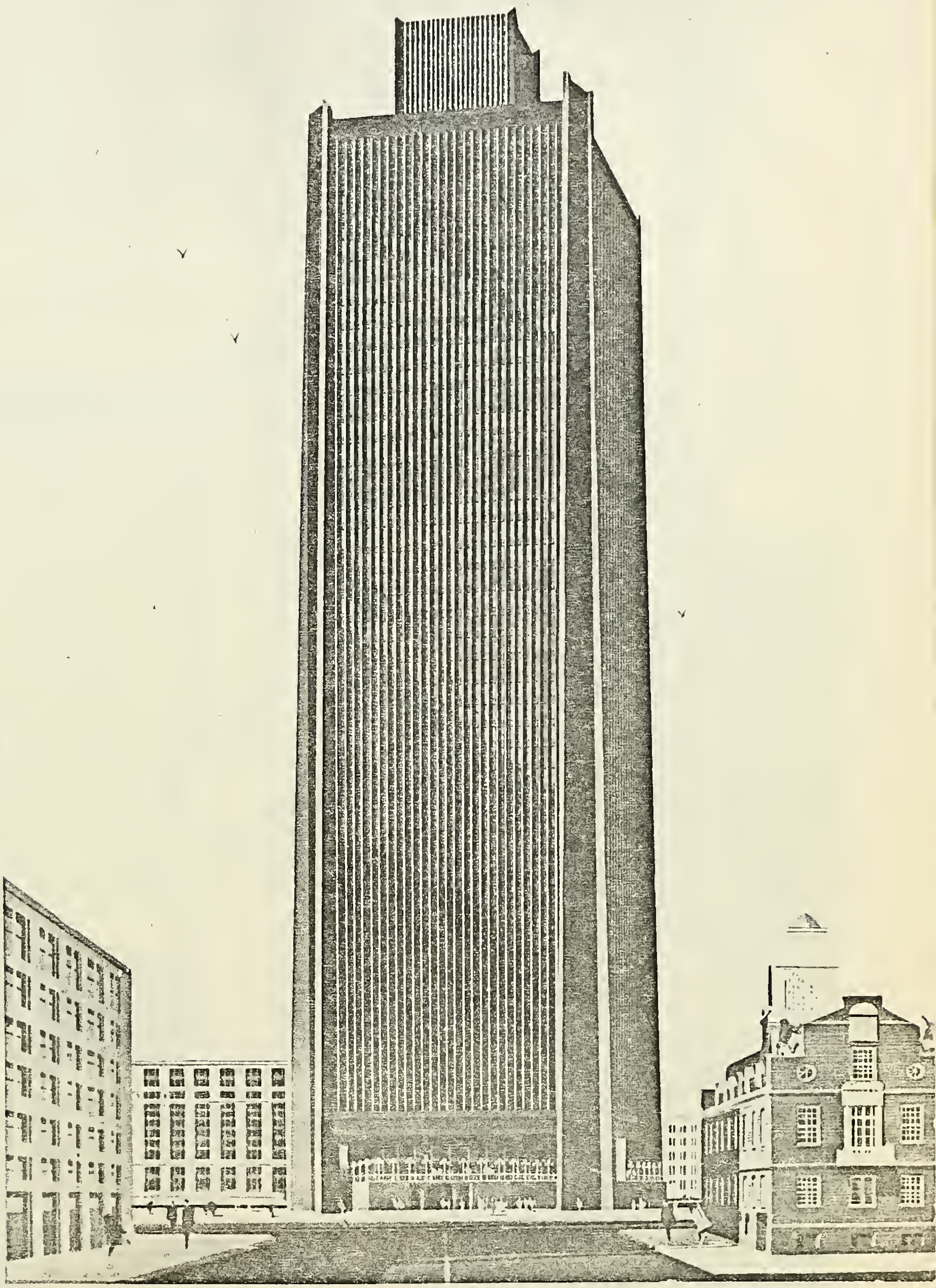
OYSTER HOUSE
UNION STREET



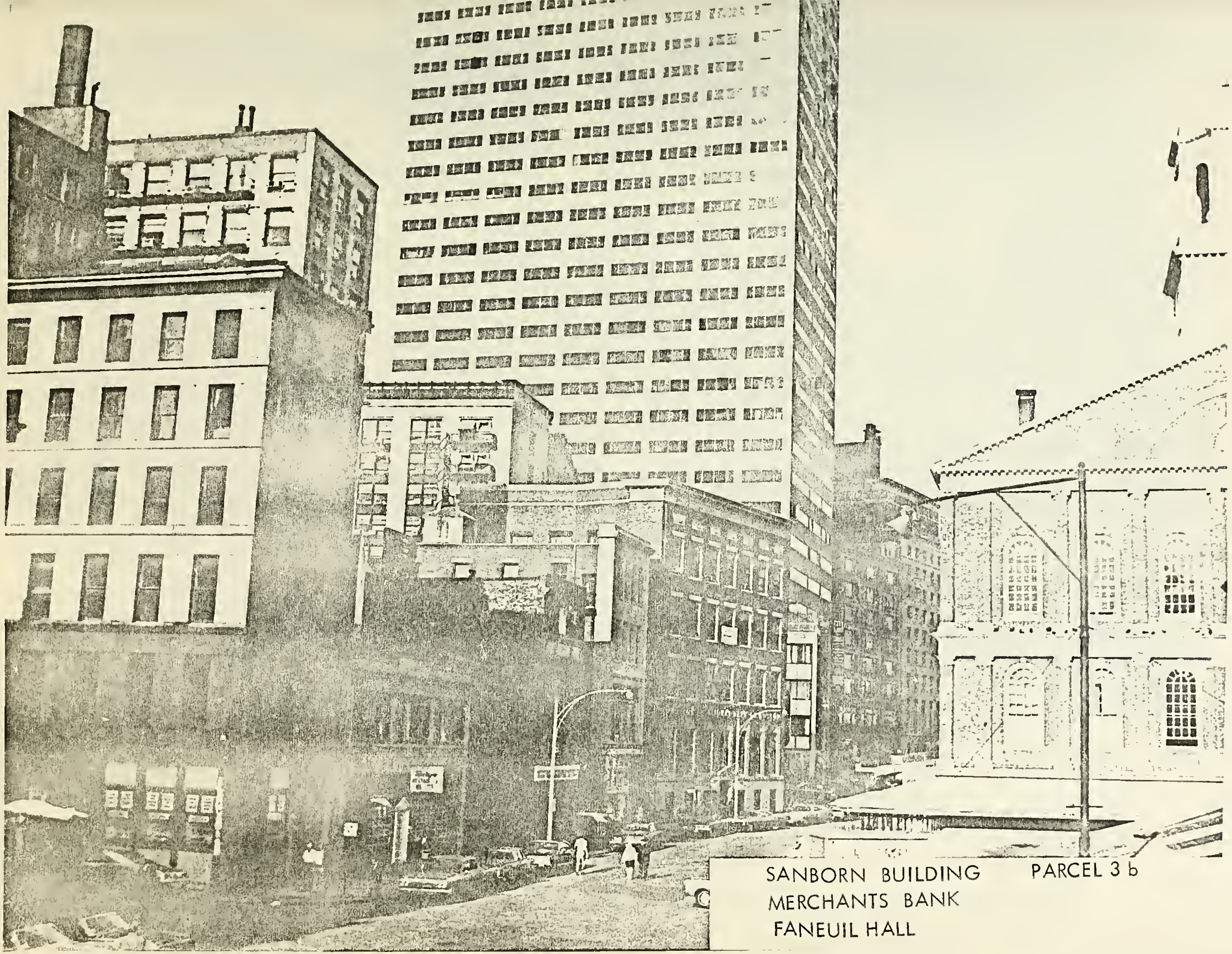
BLACKSTONE BLOCK



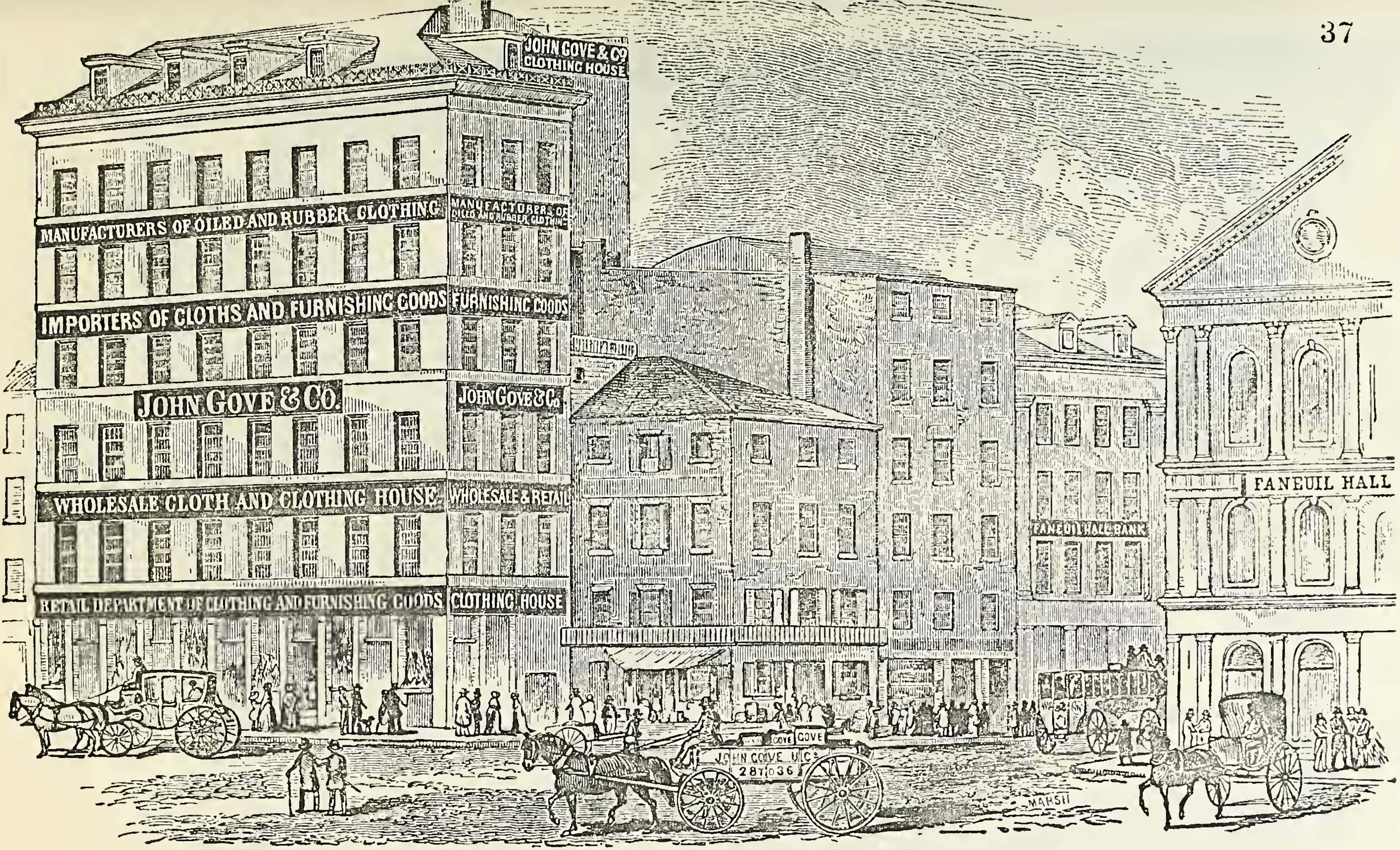
BLACKSTONE BLOCK



BOSTON COMPANY BUILDING AT
WASHINGTON STREET AND COURT



SANBORN BUILDING PARCEL 3 b
MERCHANTS BANK
FANEUIL HALL

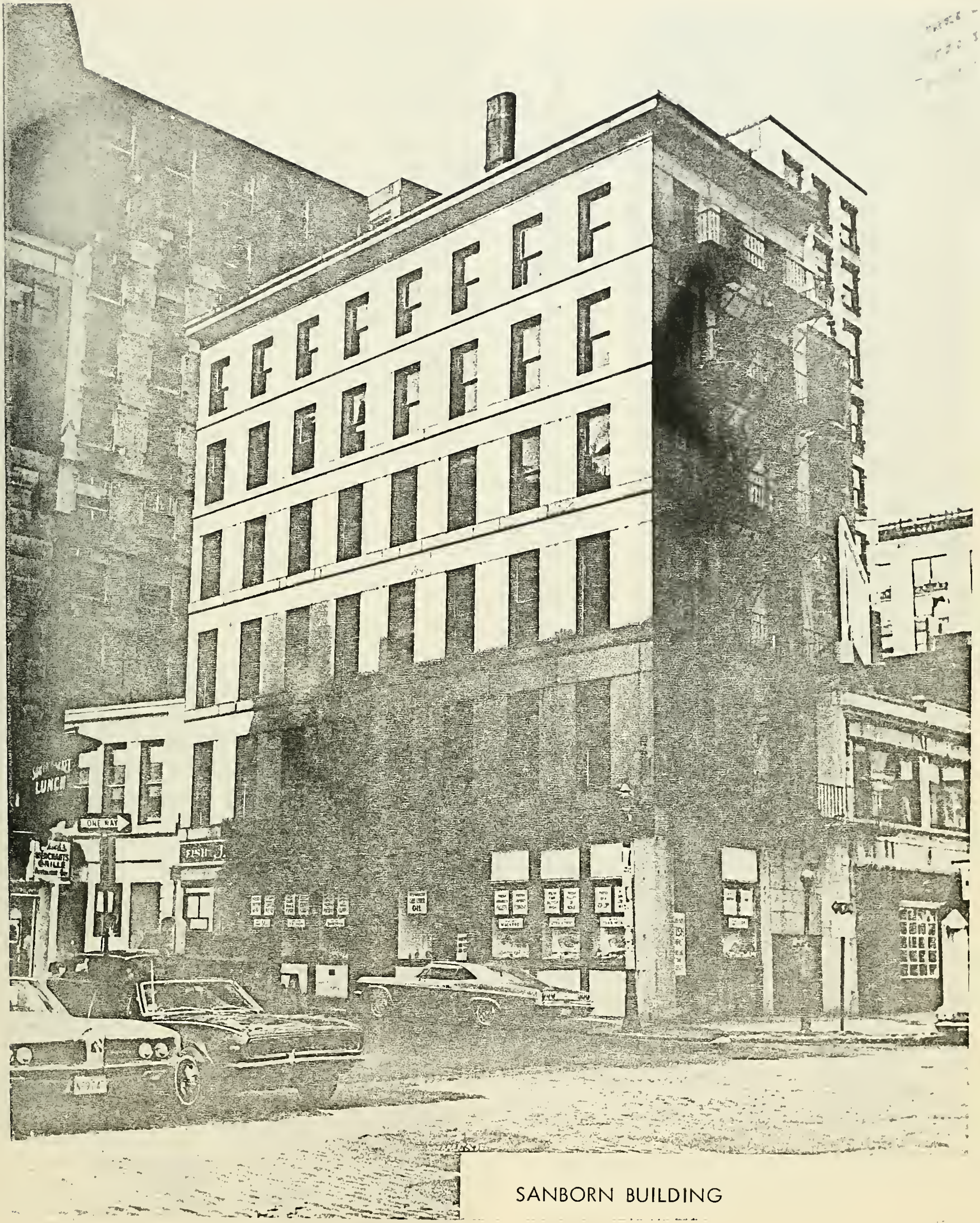

JOHN GOVE & Co
CLOTHING HOUSE
MANUFACTURERS OF OILED AND RUBBER CLOTHING
MANUFACTURERS OF OILED AND RUBBER CLOTHING
IMPORTERS OF CLOTHS AND FURNISHING GOODS
FURNISHING GOODS
JOHN GOVE & CO.
JOHN GOVE & Co.
WHOLESALE CLOTH AND CLOTHING HOUSE
WHOLESALE & RETAIL
RETAIL DEPARTMENT OF CLOTHING AND FURNISHING GOODS
CLOTHING HOUSE
FANEUIL HALL BANK
FANEUIL HALL
GOVE
GOVE
JOHN GOVE & Co
28 to 36
MARSH

JOHN GOVE & CO.'S CLOTHING CIRCULAR.

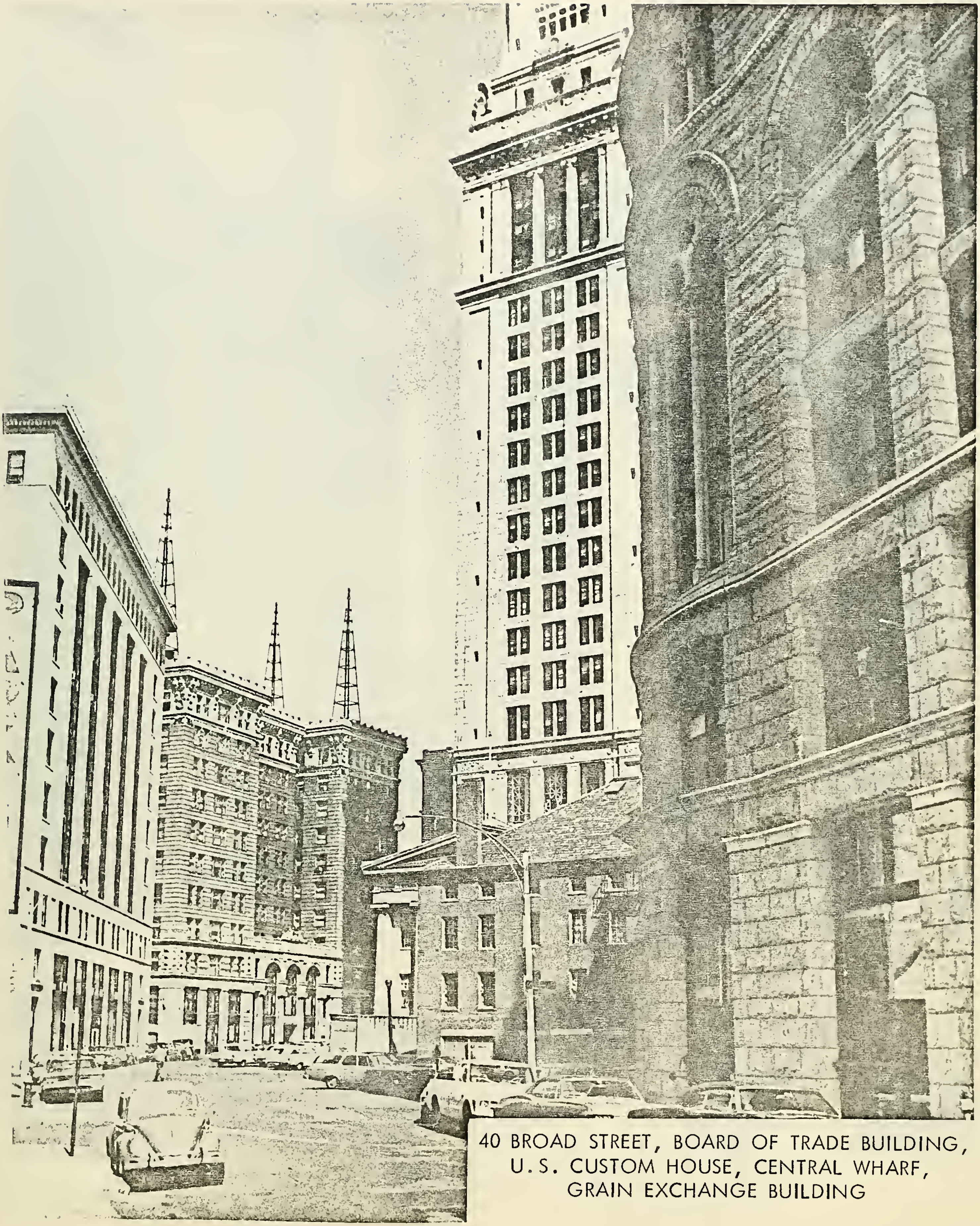
28, 30, 32, 34 & 36 MERCHANTS' ROW, AND NO. 1 MARKET SQUARE,

In the six story Granite Block,
Between Faneuil Hall and State Street,

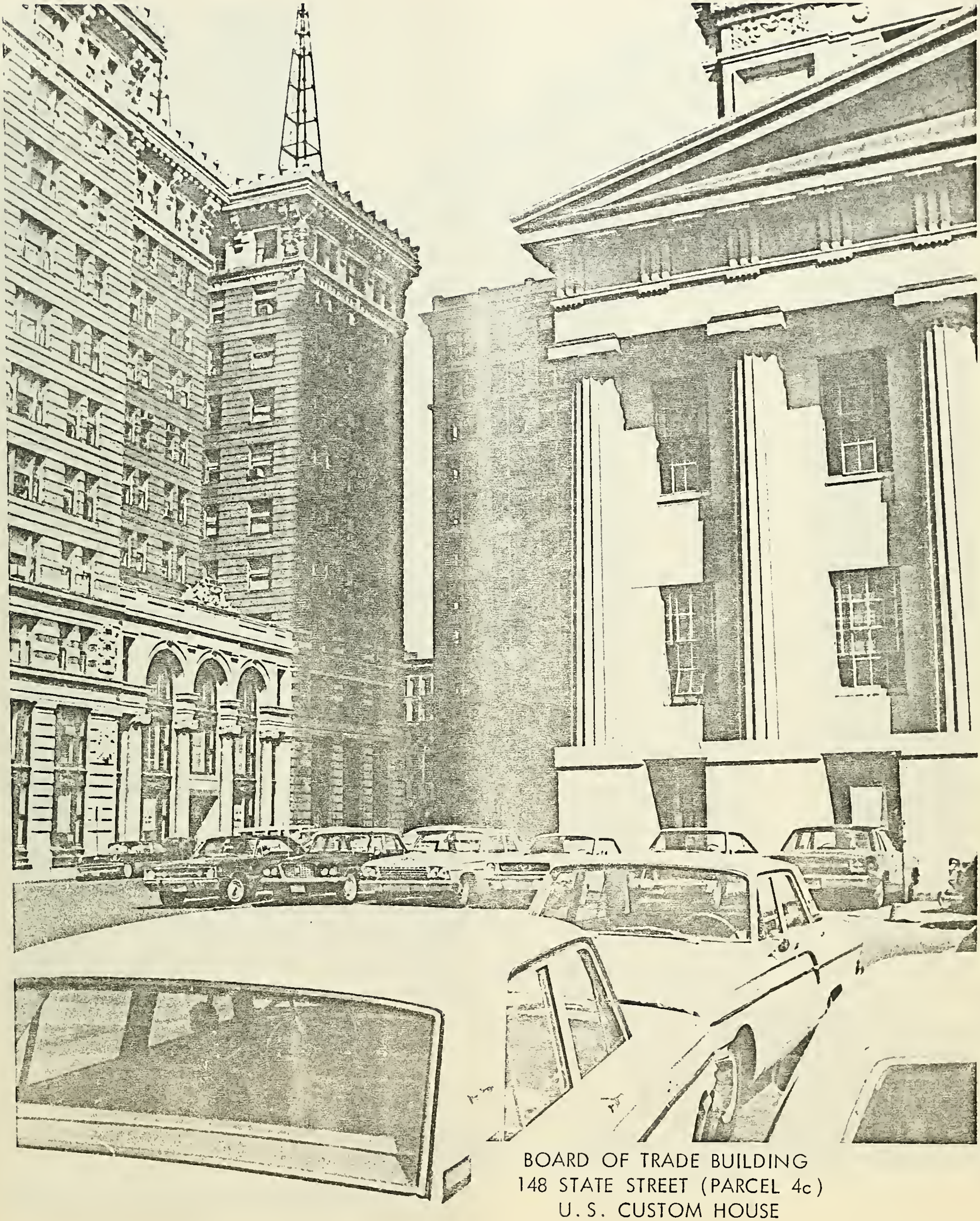
SANBORN BUILDING - PARCEL 36
FANEUIL HALL
ca. 1855



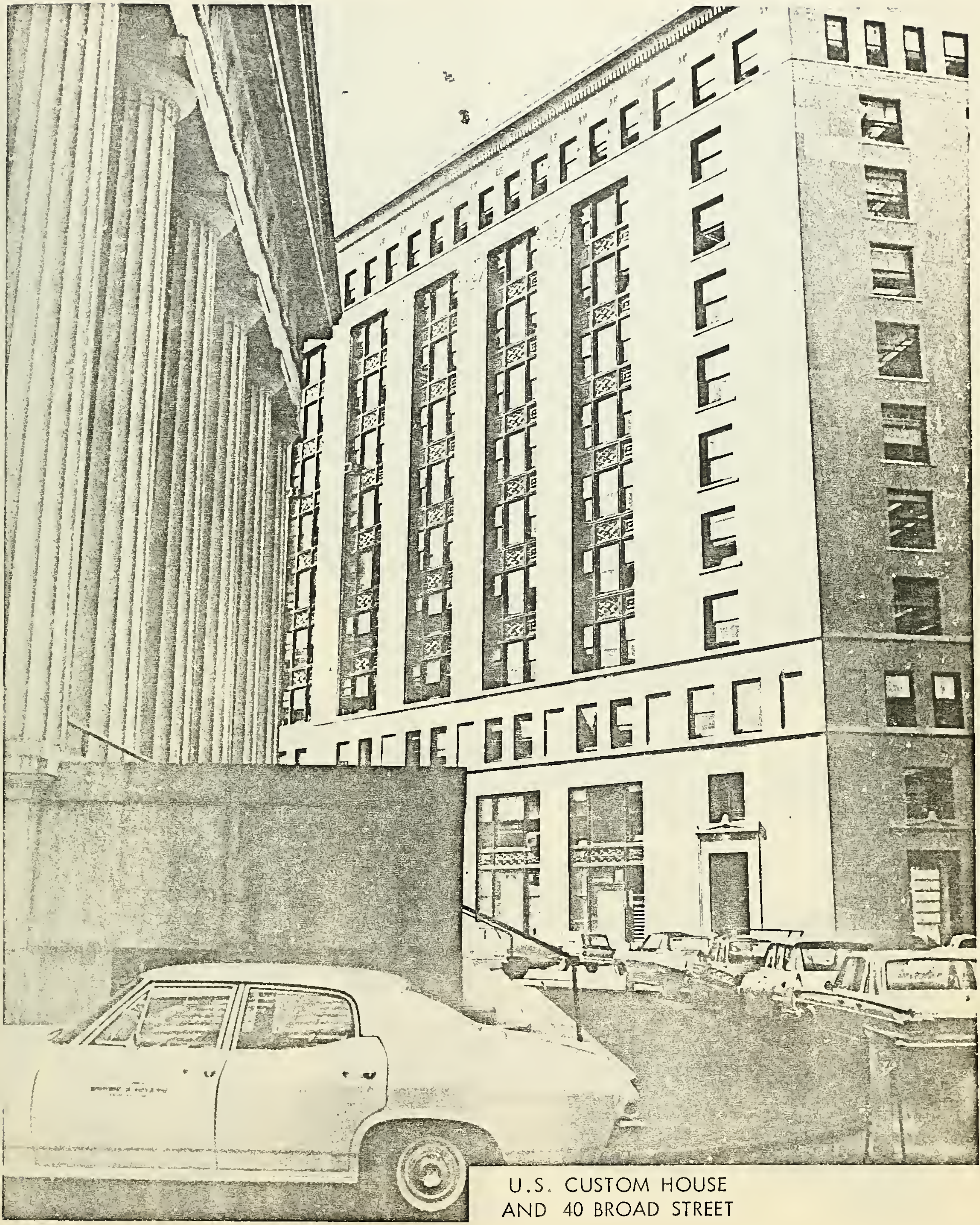
SANBORN BUILDING



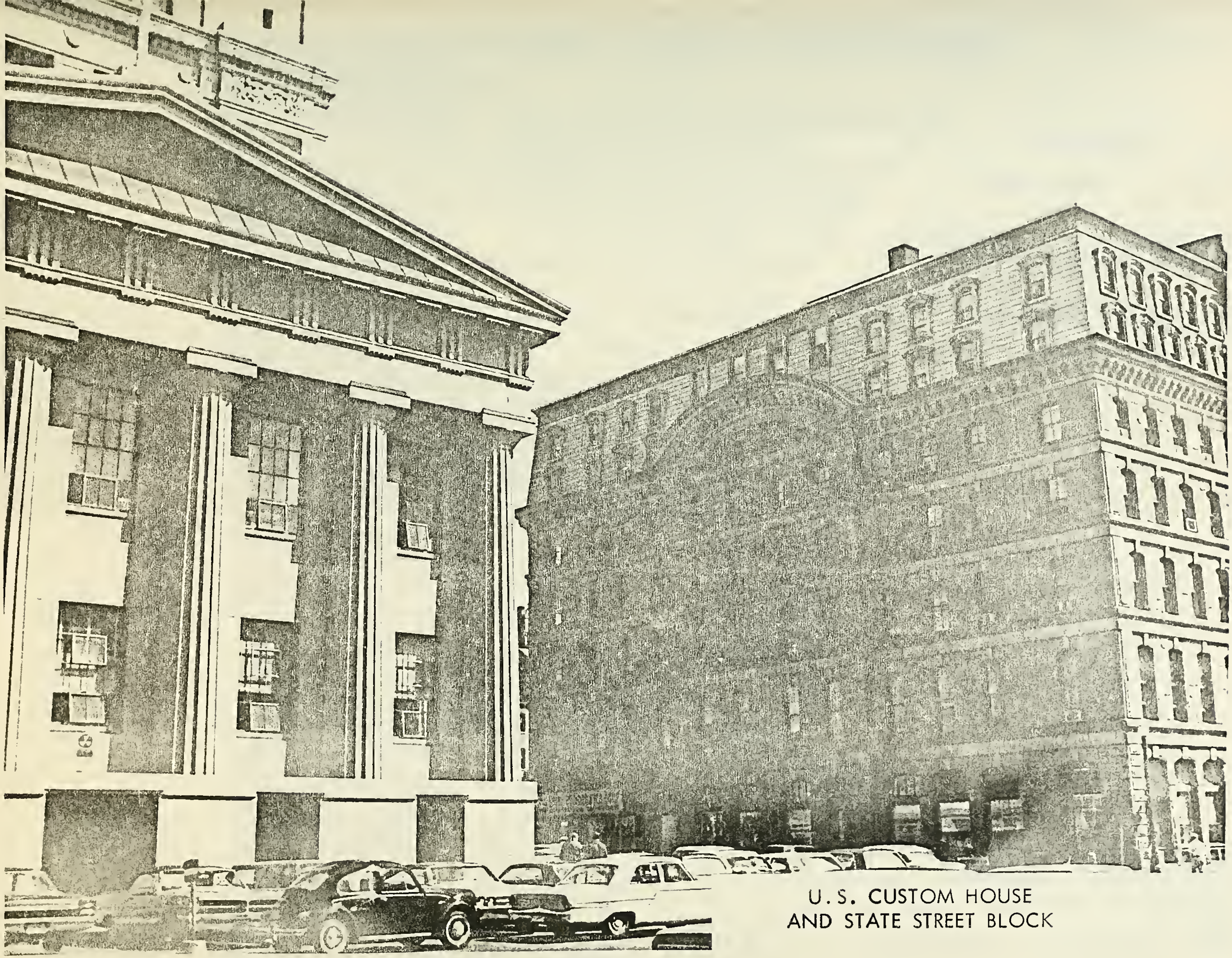
40 BROAD STREET, BOARD OF TRADE BUILDING, U.S. CUSTOM HOUSE, CENTRAL WHARF, GRAIN EXCHANGE BUILDING



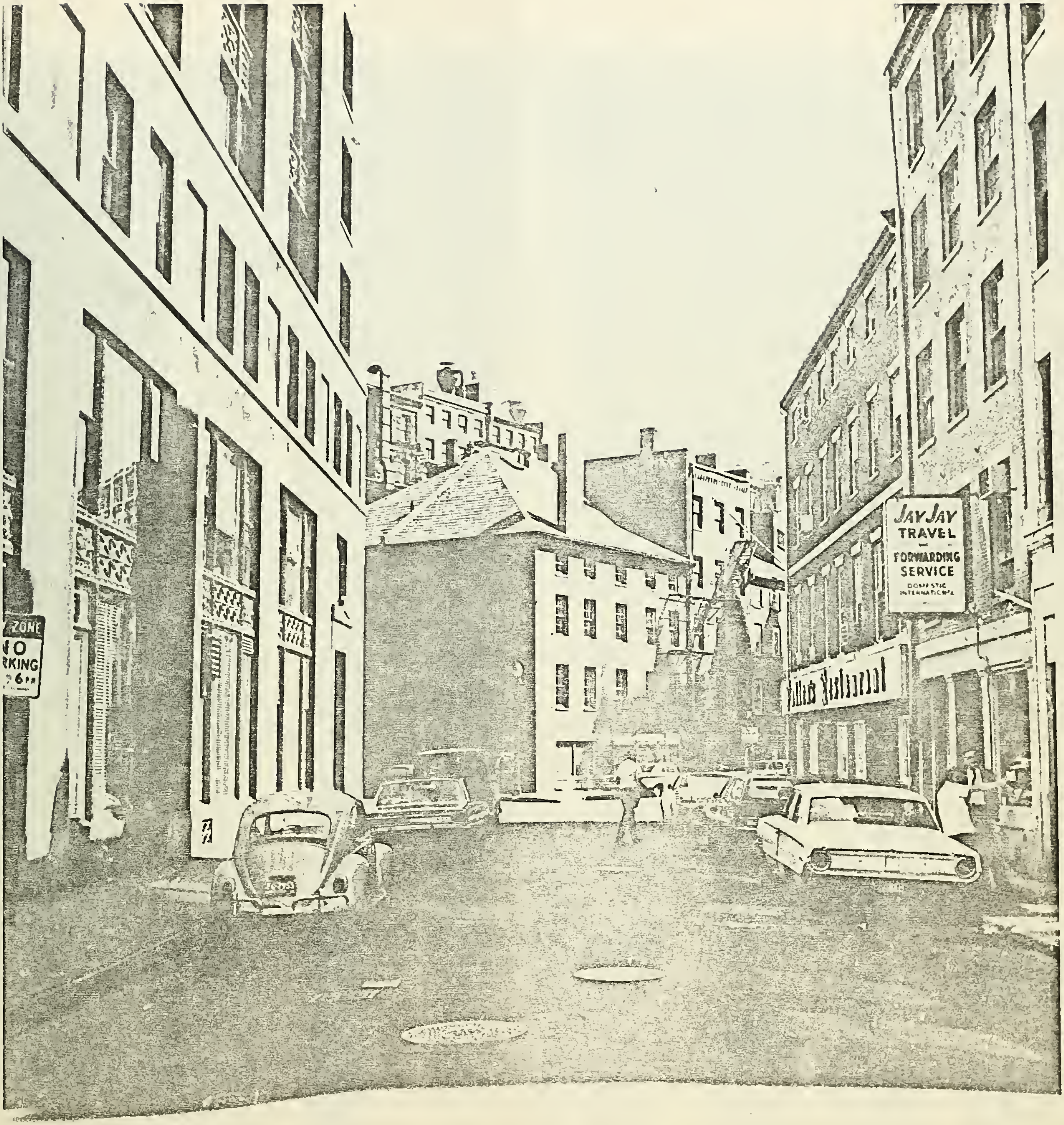
BOARD OF TRADE BUILDING
148 STATE STREET (PARCEL 4c)
U. S. CUSTOM HOUSE



U.S. CUSTOM HOUSE
AND 40 BROAD STREET

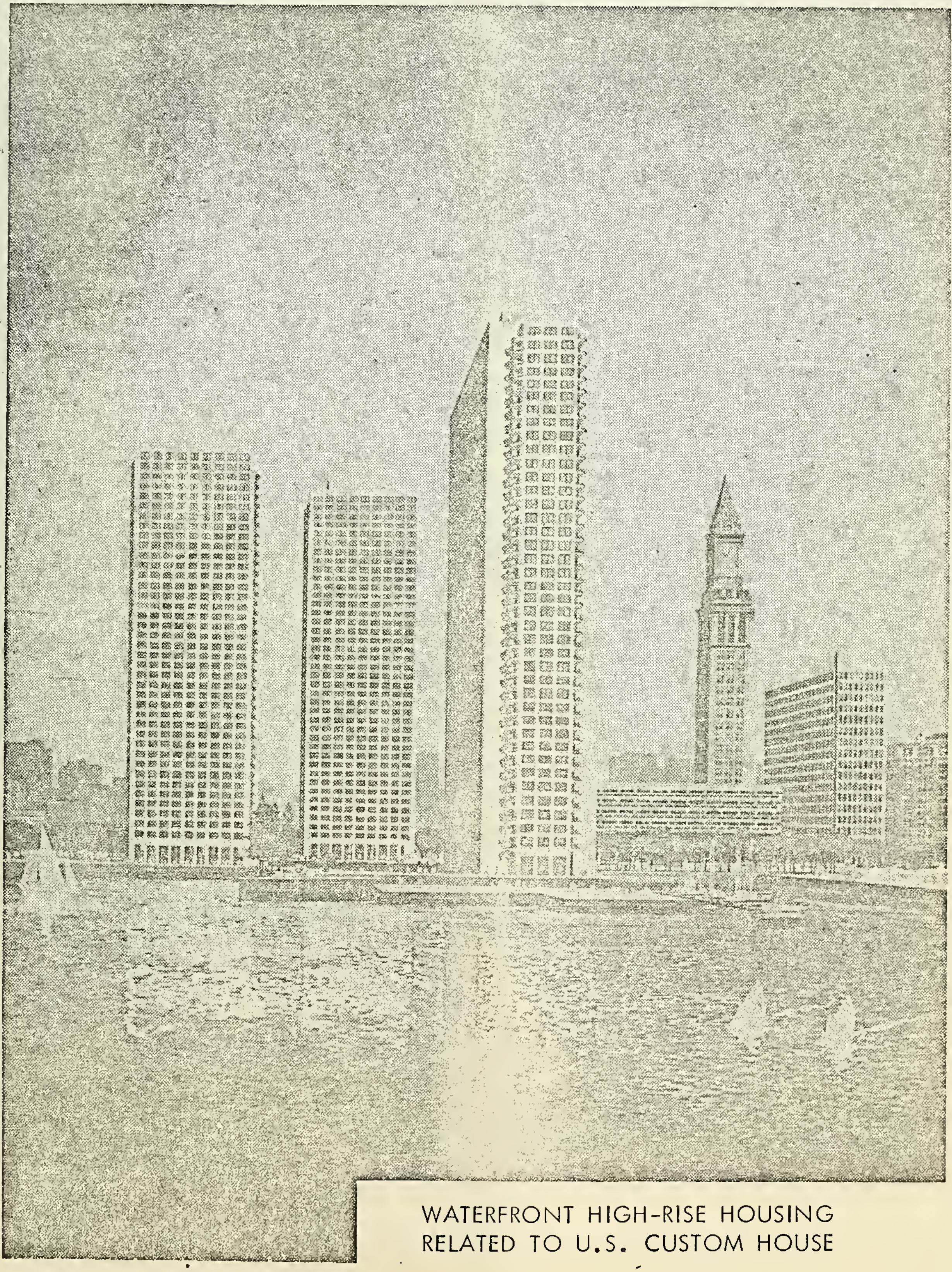


U.S. CUSTOM HOUSE
AND STATE STREET BLOCK

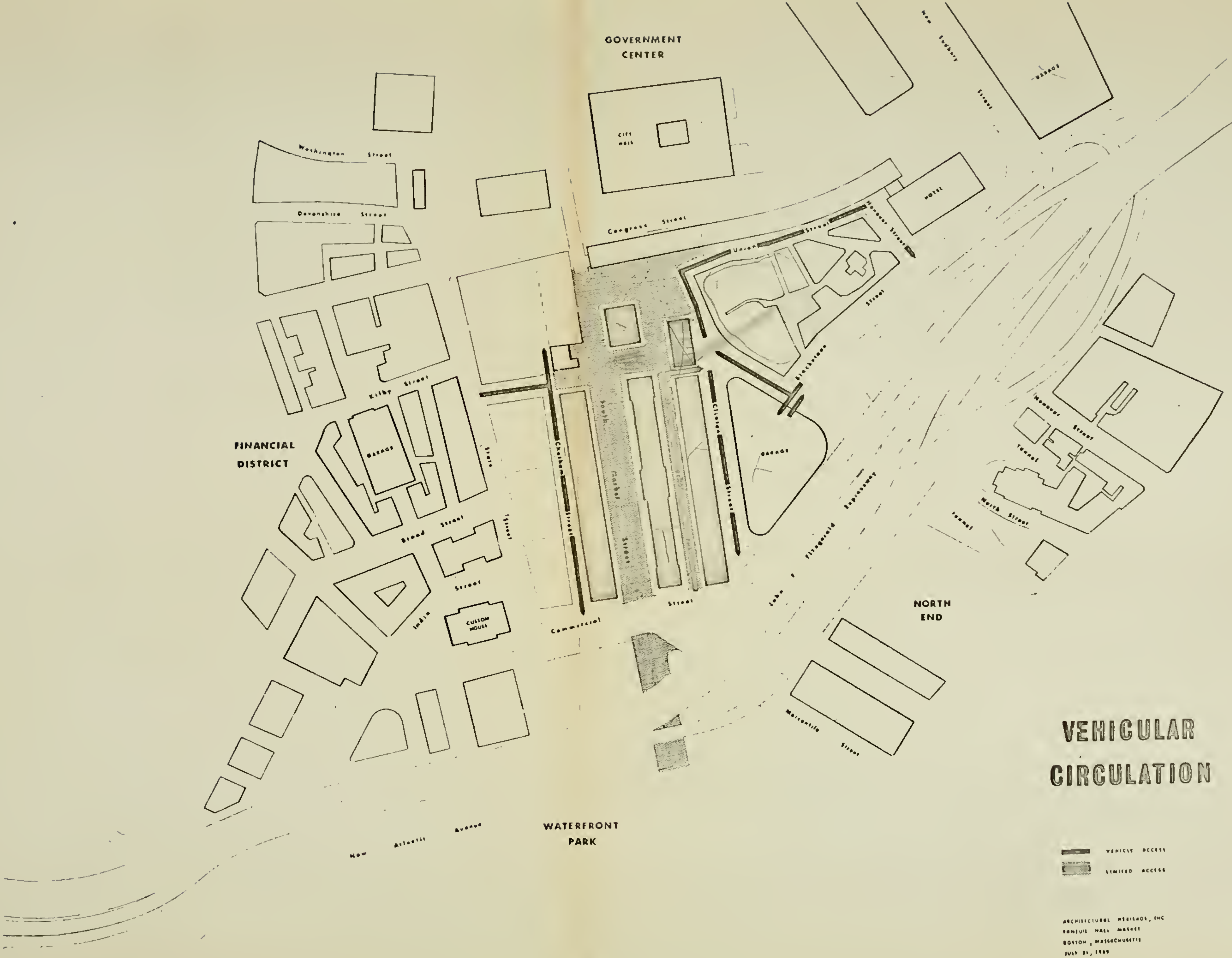


CENTRAL WHARF

U.S. CUSTOM HOUSE AND
GRAIN EXCHANGE



WATERFRONT HIGH-RISE HOUSING
RELATED TO U.S. CUSTOM HOUSE



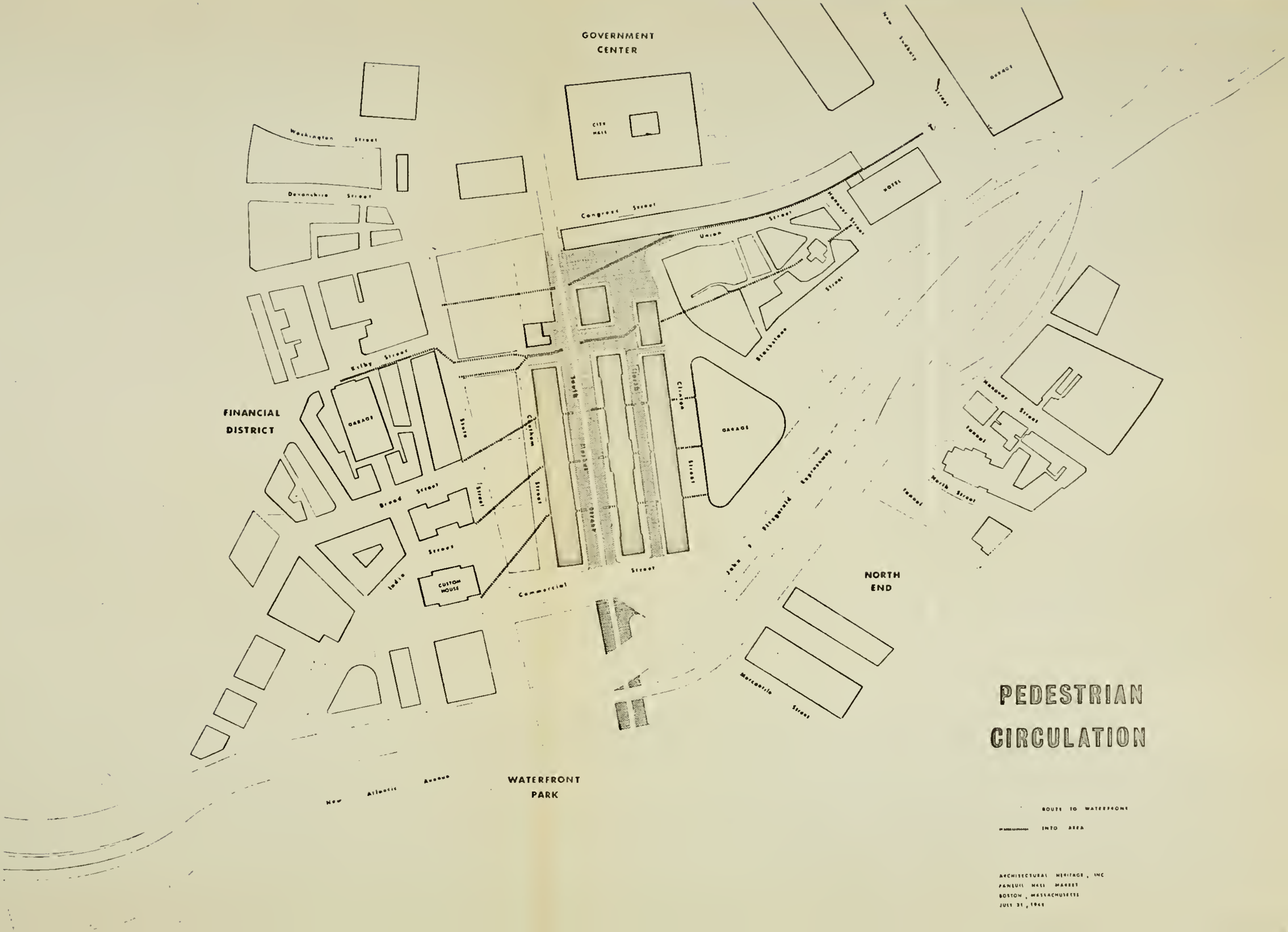
VEHICULAR CIRCULATION

▬ VEHICLE ACCESS

▨ LIMITED ACCESS

ARCHITECTURAL HERITAGE, INC
FANEUIL HALL MARKET
BOSTON, MASSACHUSETTS
JULY 31, 1969

PEDESTRIAN CIRCULATION

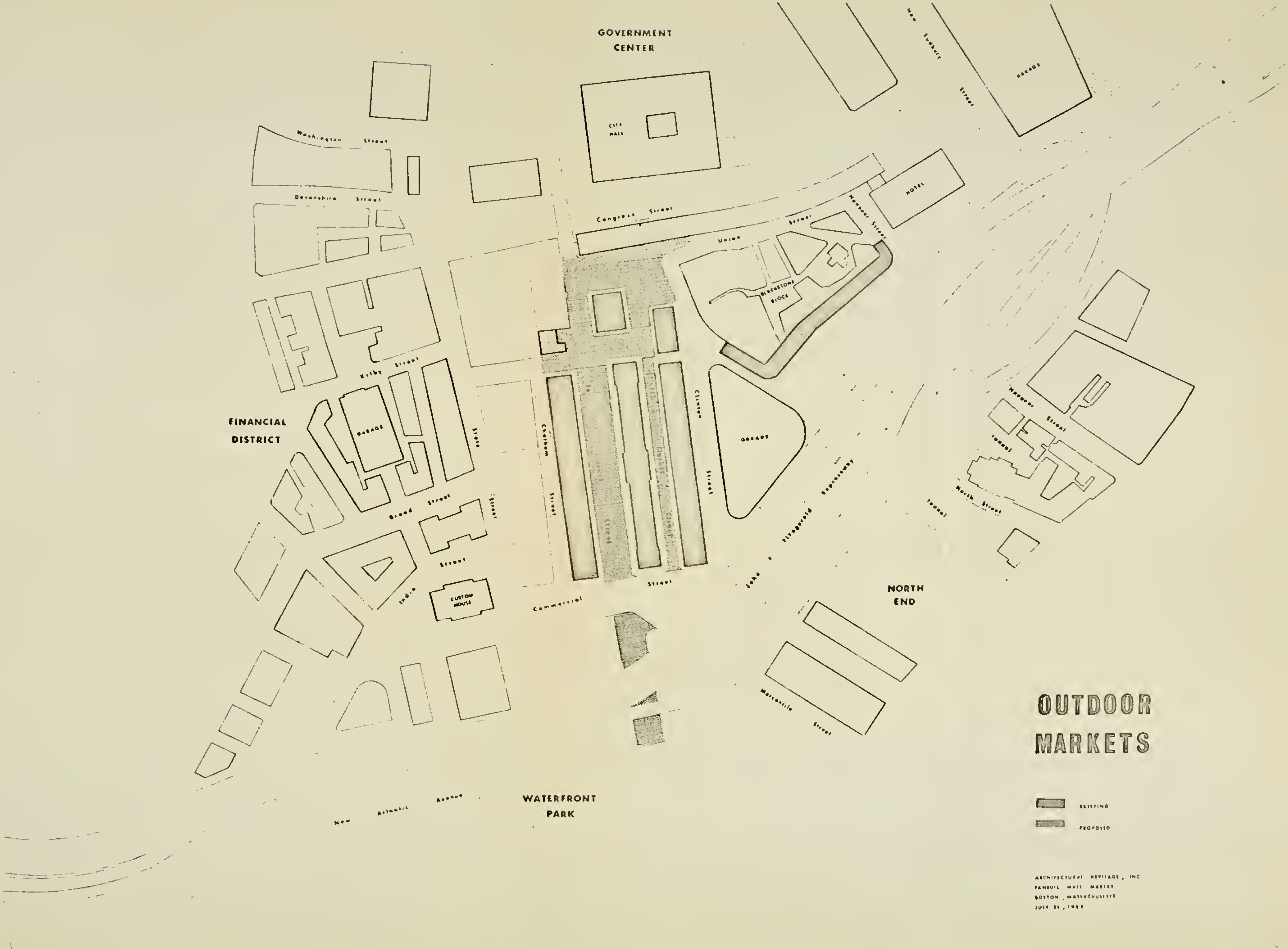


ROUTE TO WATERFRONT

INTO AREA

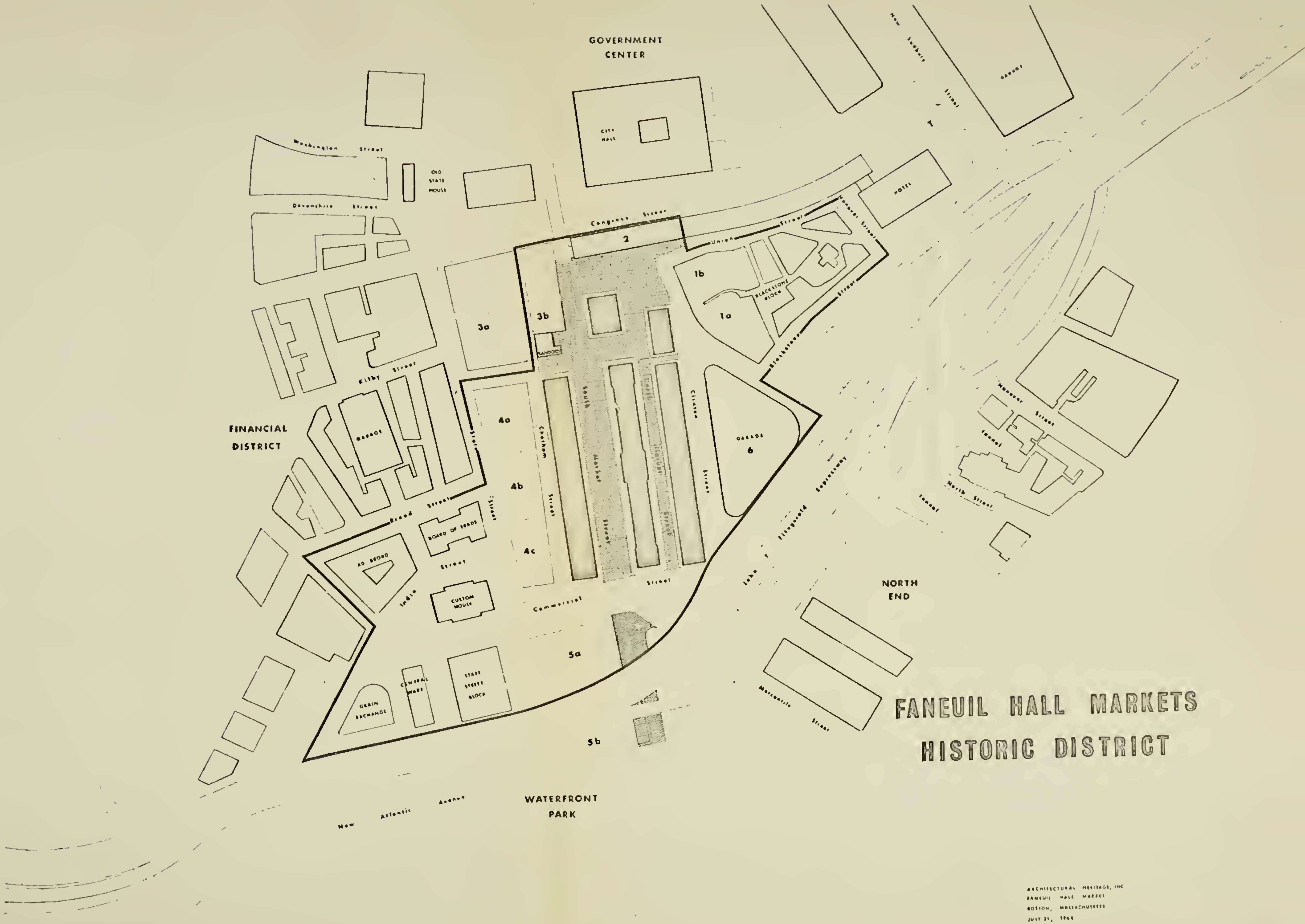
ARCHITECTURAL HERITAGE, INC
FANEUIL HALL MARKET
BOSTON, MASSACHUSETTS
JULY 31, 1968

OUTDOOR MARKETS



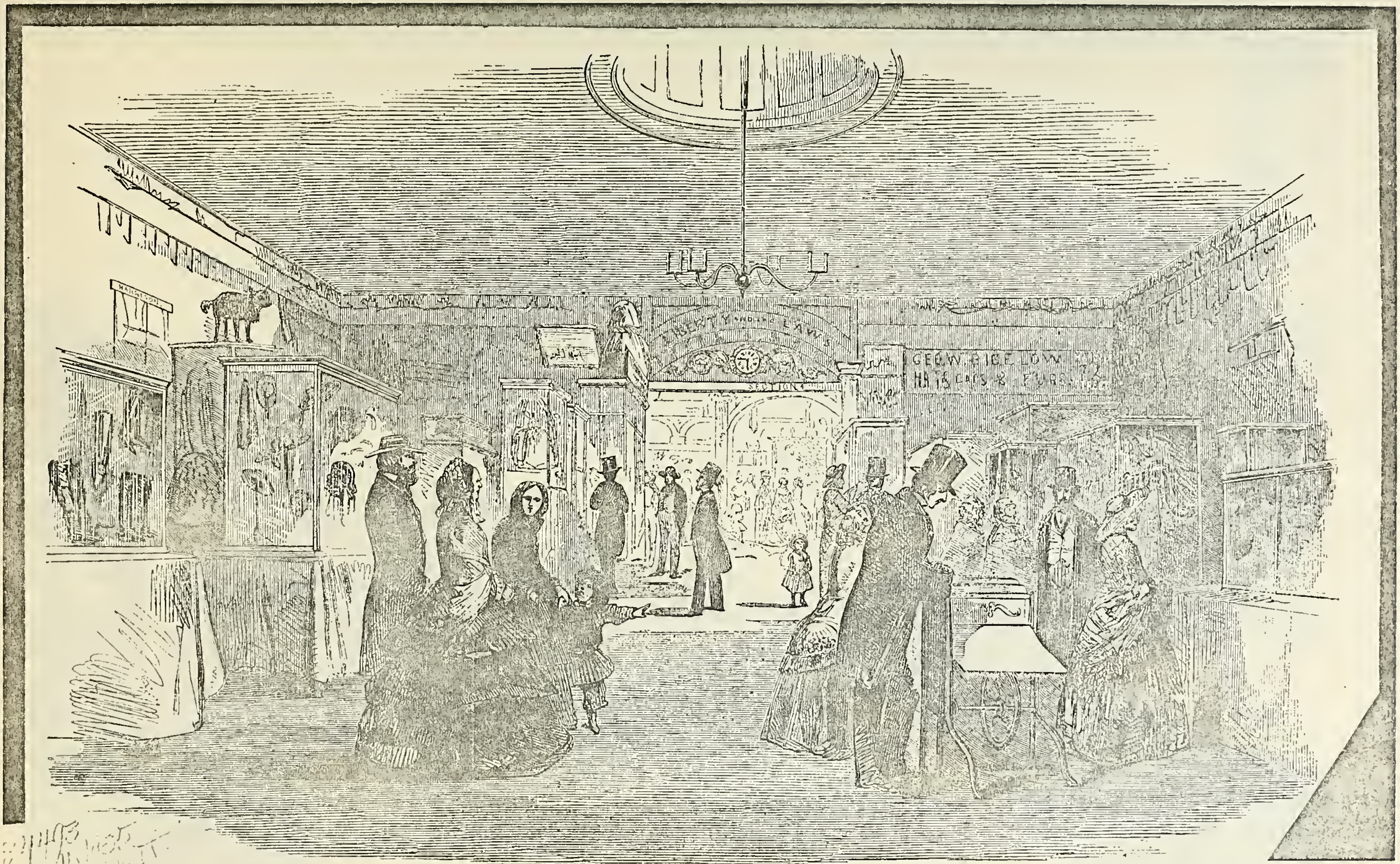
ARCHITECTURAL HERITAGE, INC
FANEUIL HALL MARKET
BOSTON, MASSACHUSETTS
JULY 31, [illegible]

3



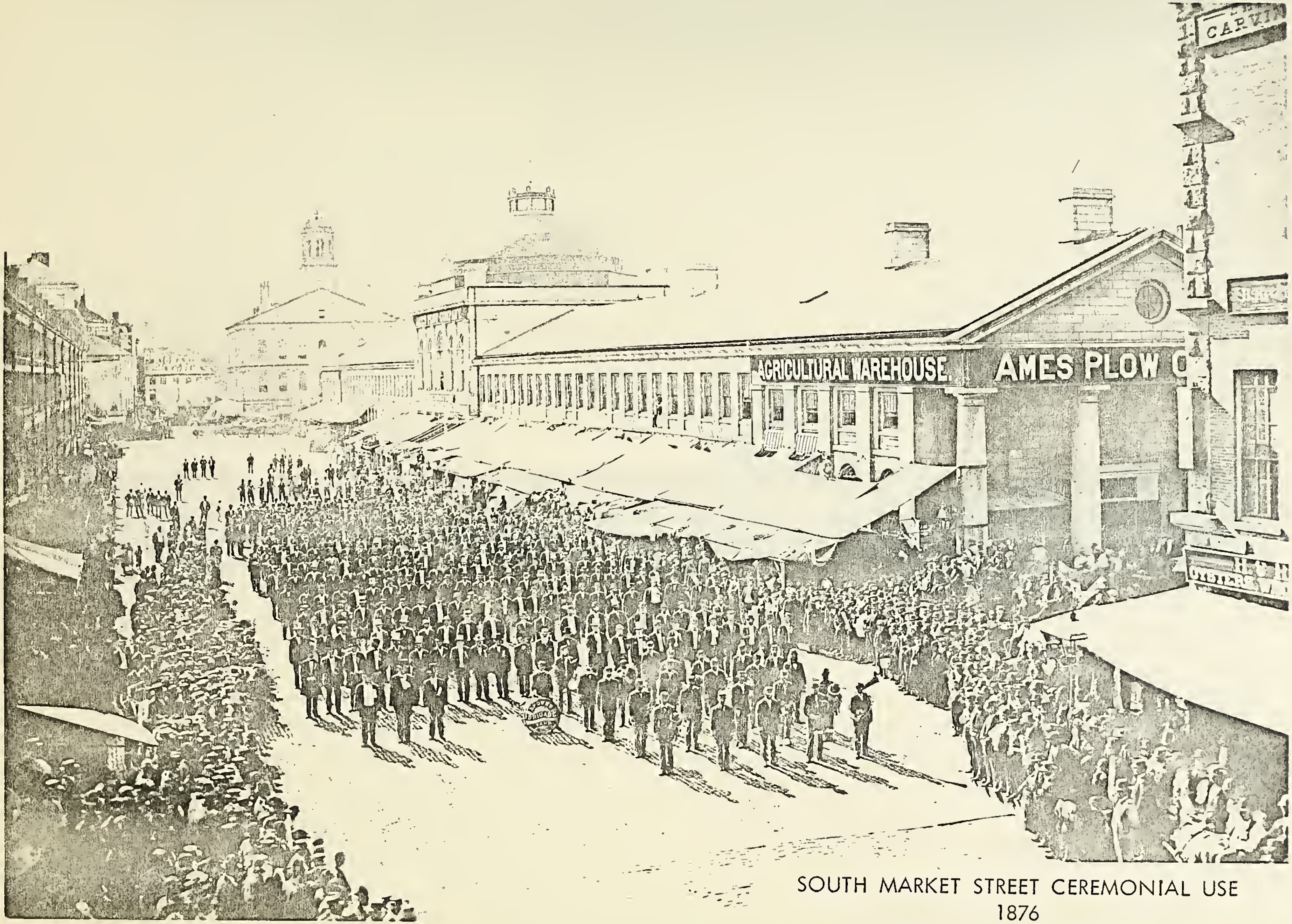
FANEUIL HALL MARKETS HISTORIC DISTRICT

ARCHITECTURAL HERITAGE, INC
FANEUIL HALL MARKET
BOSTON, MASSACHUSETTS
JULY 31, 1968

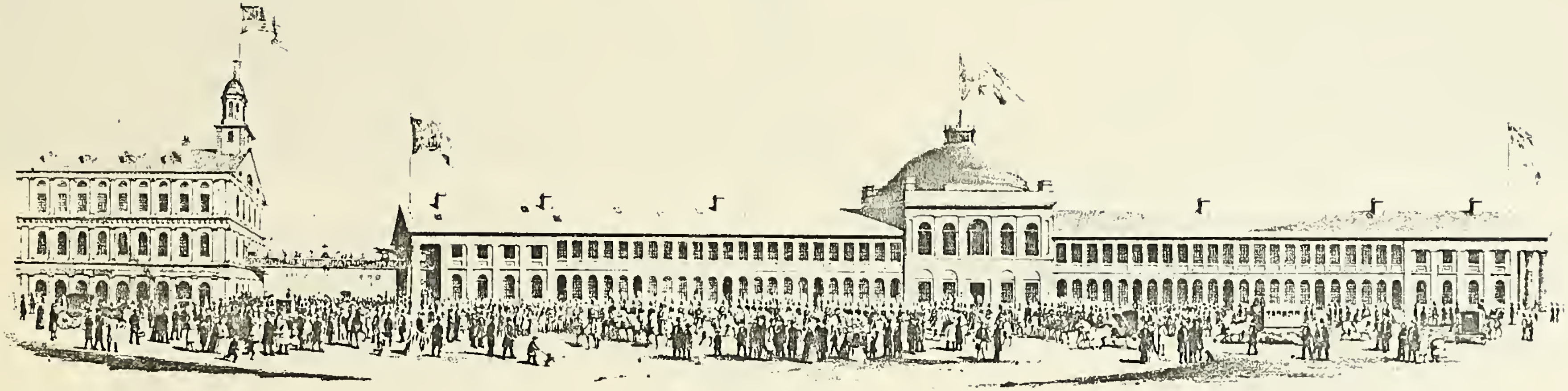


EIGHTH EXHIBITION OF THE MASSACHUSETTS MECHANICS' CHARITABLE ASSOCIATION

EXHIBITION USE OF GALLERIES
OF FANEUIL HALL MARKET
ca. 1856

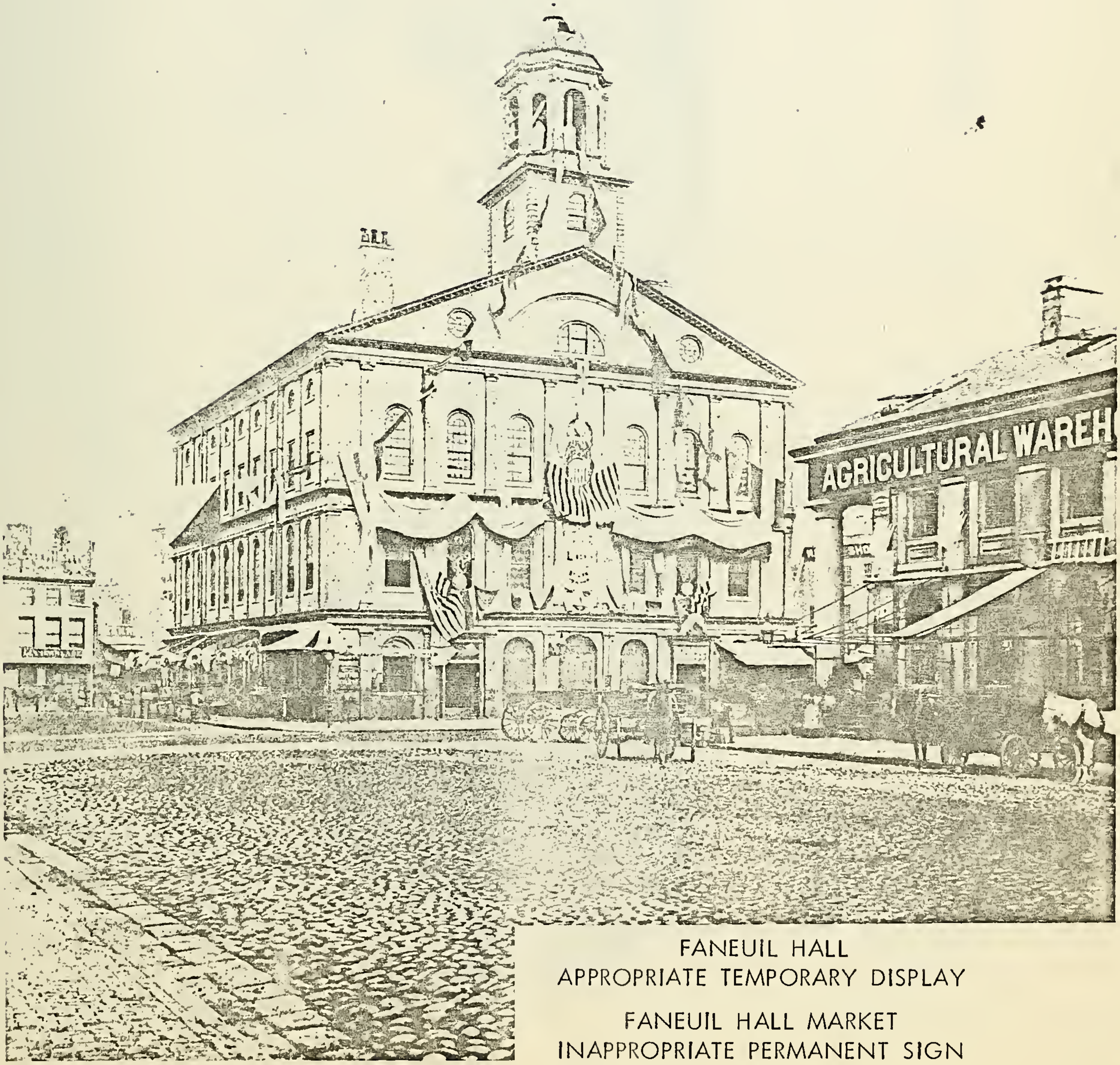


SOUTH MARKET STREET CEREMONIAL USE
1876



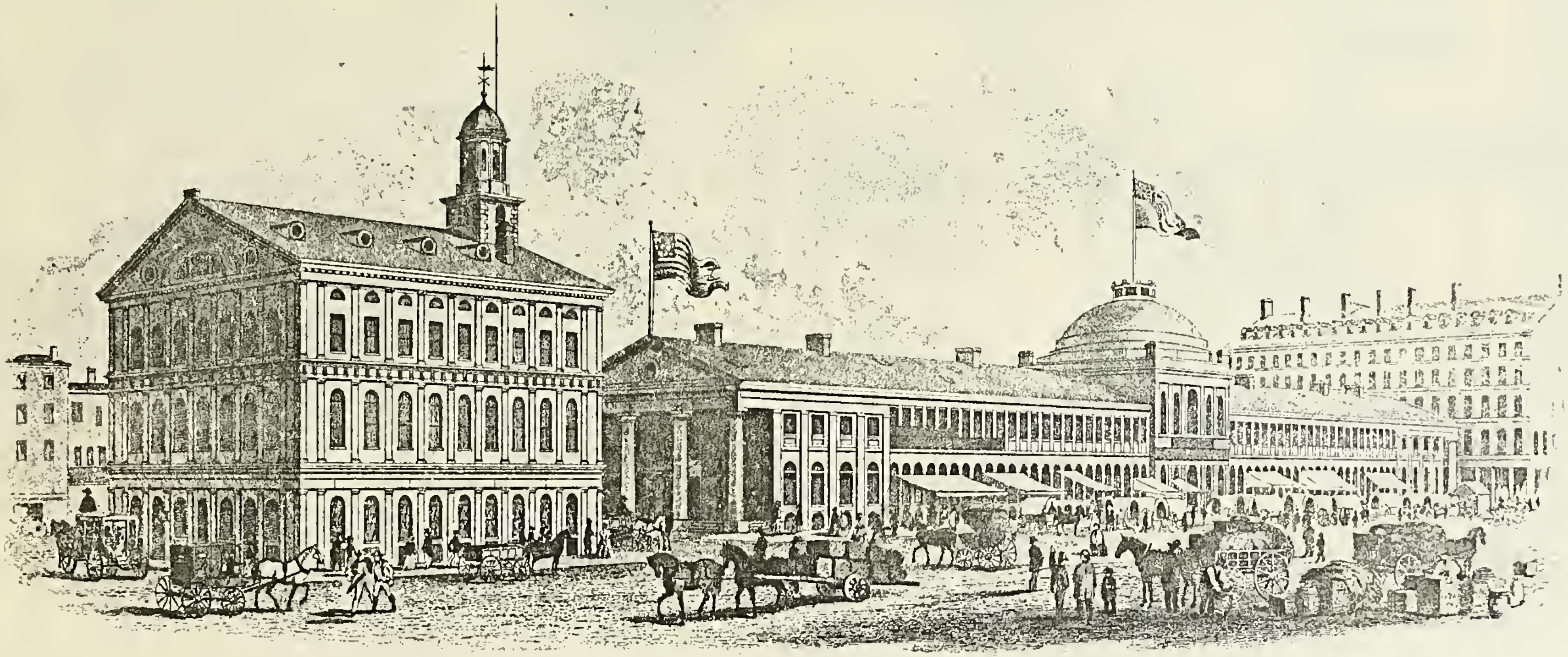
Bradford & Co. Lith.

APPROPRIATE USE OF FLAGS FOR
CEREMONIAL PURPOSES
ca. 1856



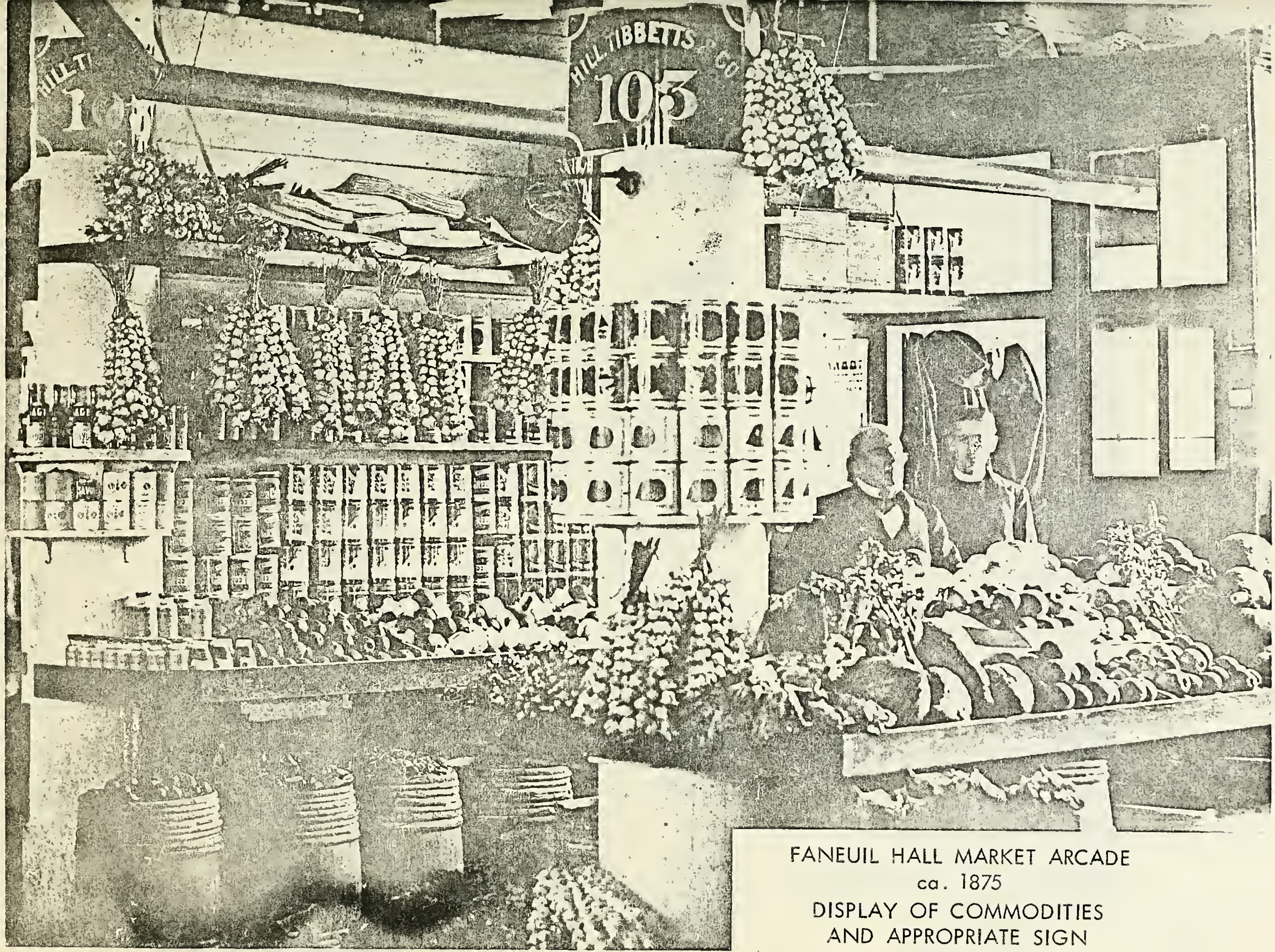
FANEUIL HALL
APPROPRIATE TEMPORARY DISPLAY

FANEUIL HALL MARKET
INAPPROPRIATE PERMANENT SIGN

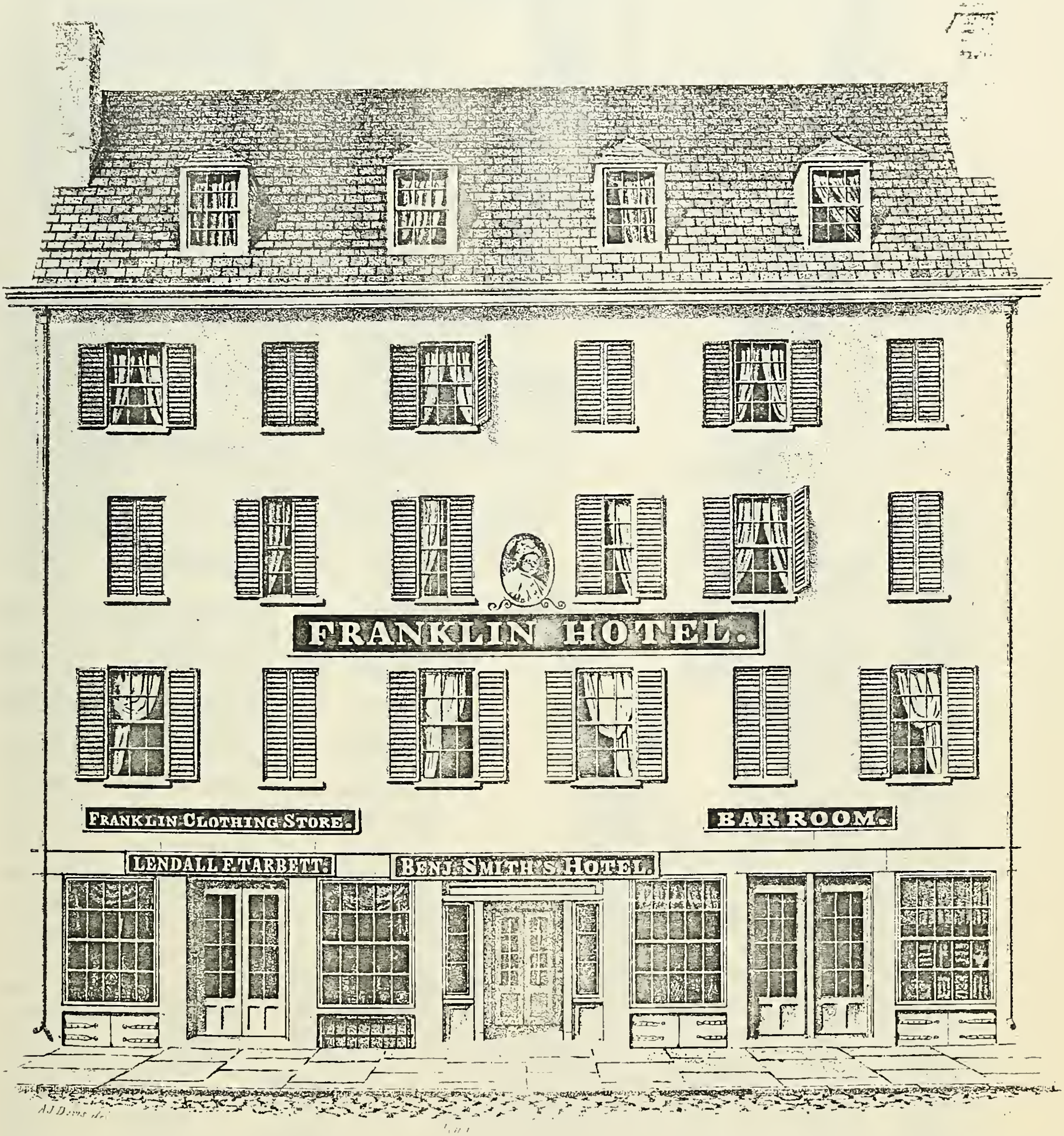


APPROPRIATE AWNINGS AND FLAGS

[illegible]



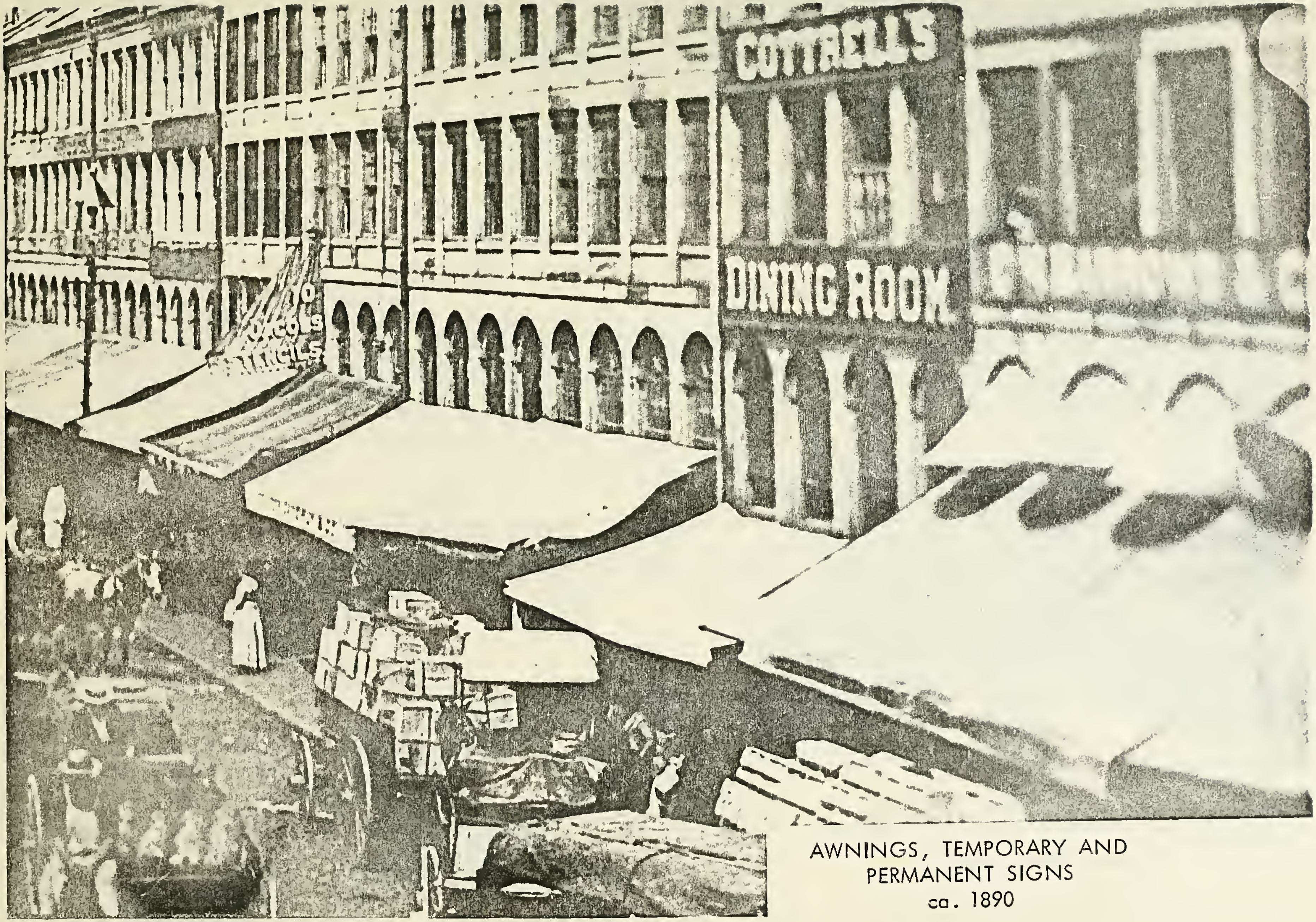
FANEUIL HALL MARKET ARCADE
ca. 1875
DISPLAY OF COMMODITIES
AND APPROPRIATE SIGN


FRANKLIN HOTEL.
FRANKLIN CLOTHING STORE.
BAR ROOM.
LENDALL F. TARBETT.
BENJ. SMITH'S HOTEL.

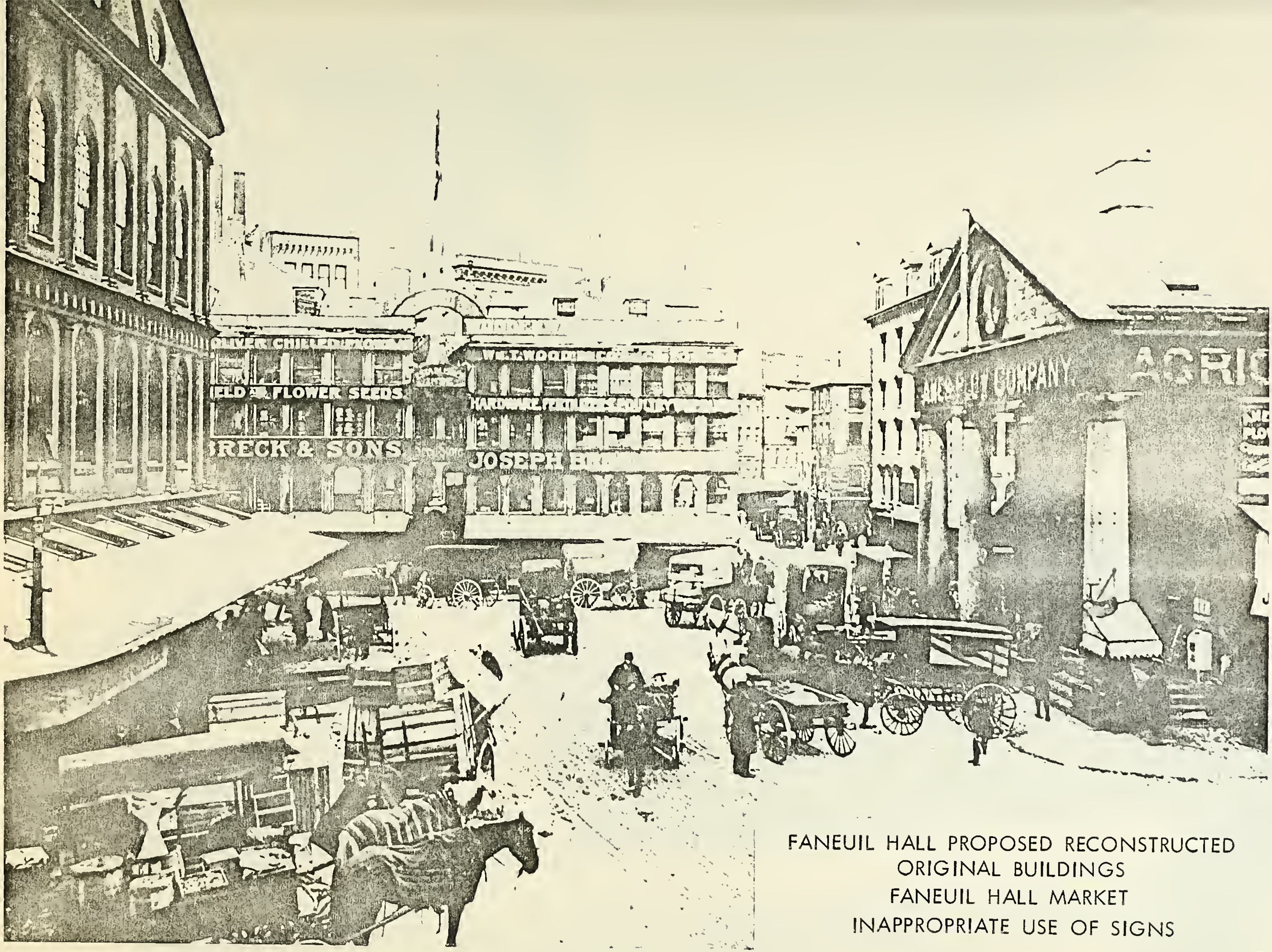
A.J. Davis del.

MERCHANTS ROW, BOSTON.

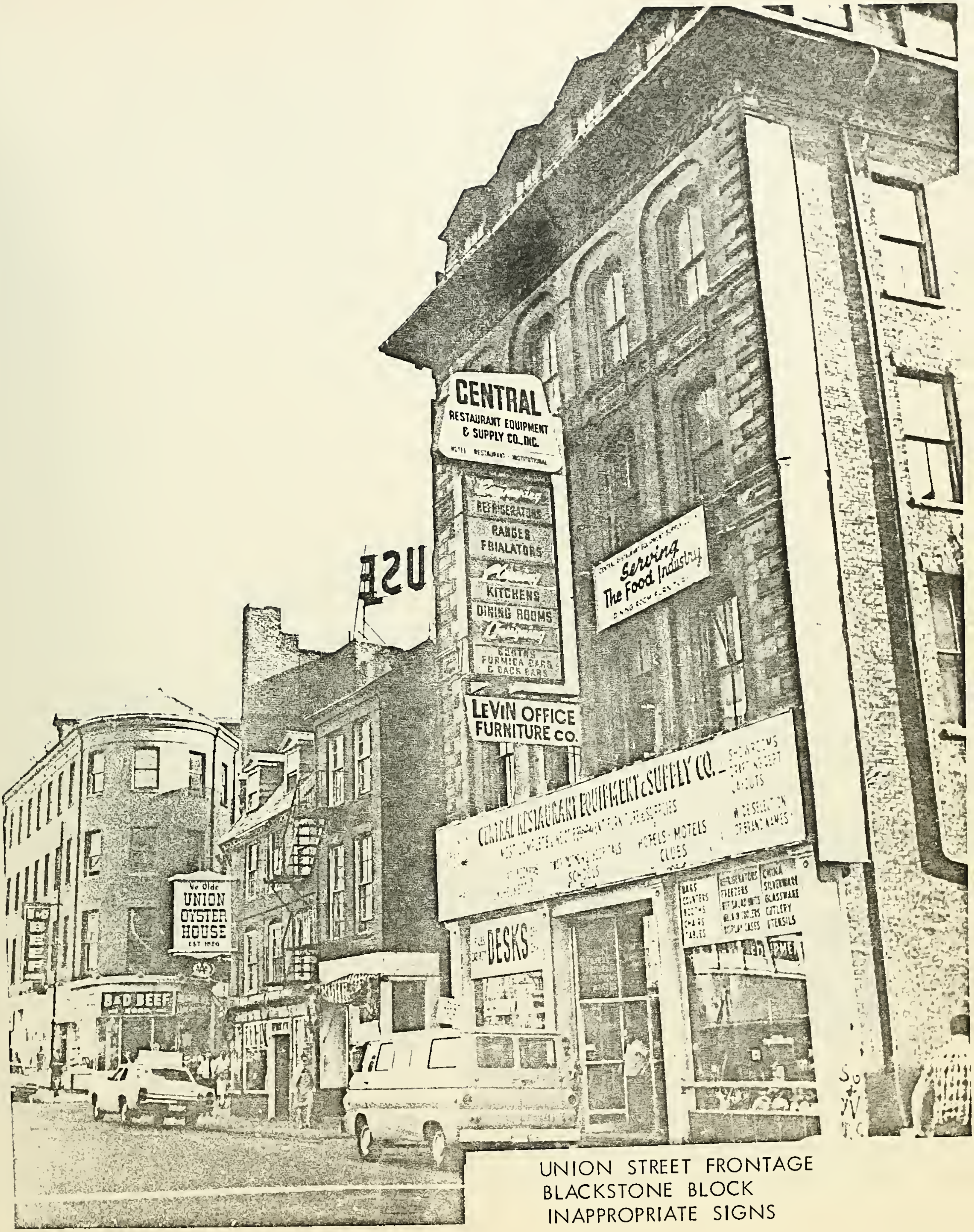
LATE FEDERAL BRICK BUILDING
APPROPRIATE USE OF SIGNS



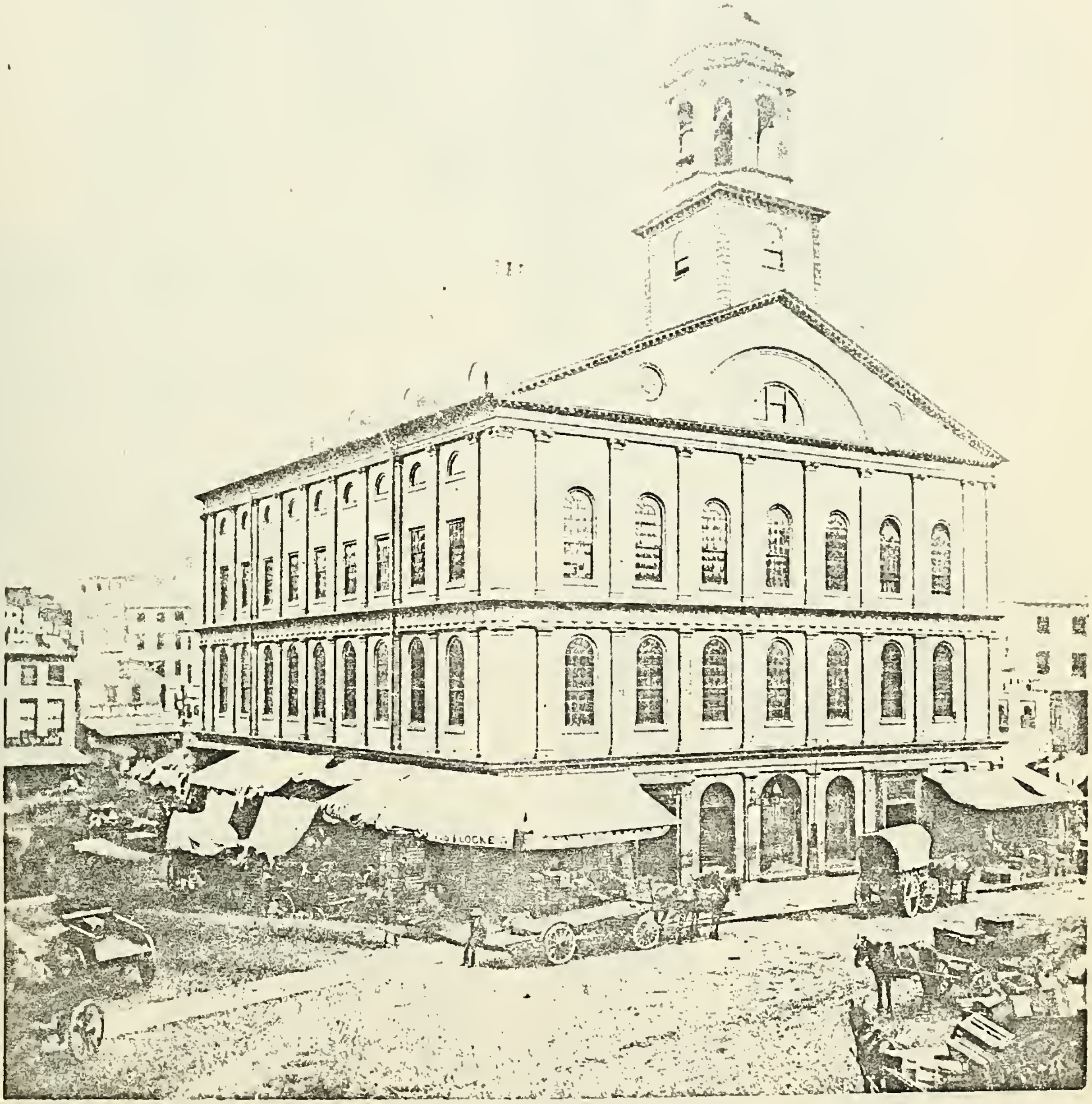
AWNINGS, TEMPORARY AND
PERMANENT SIGNS
ca. 1890



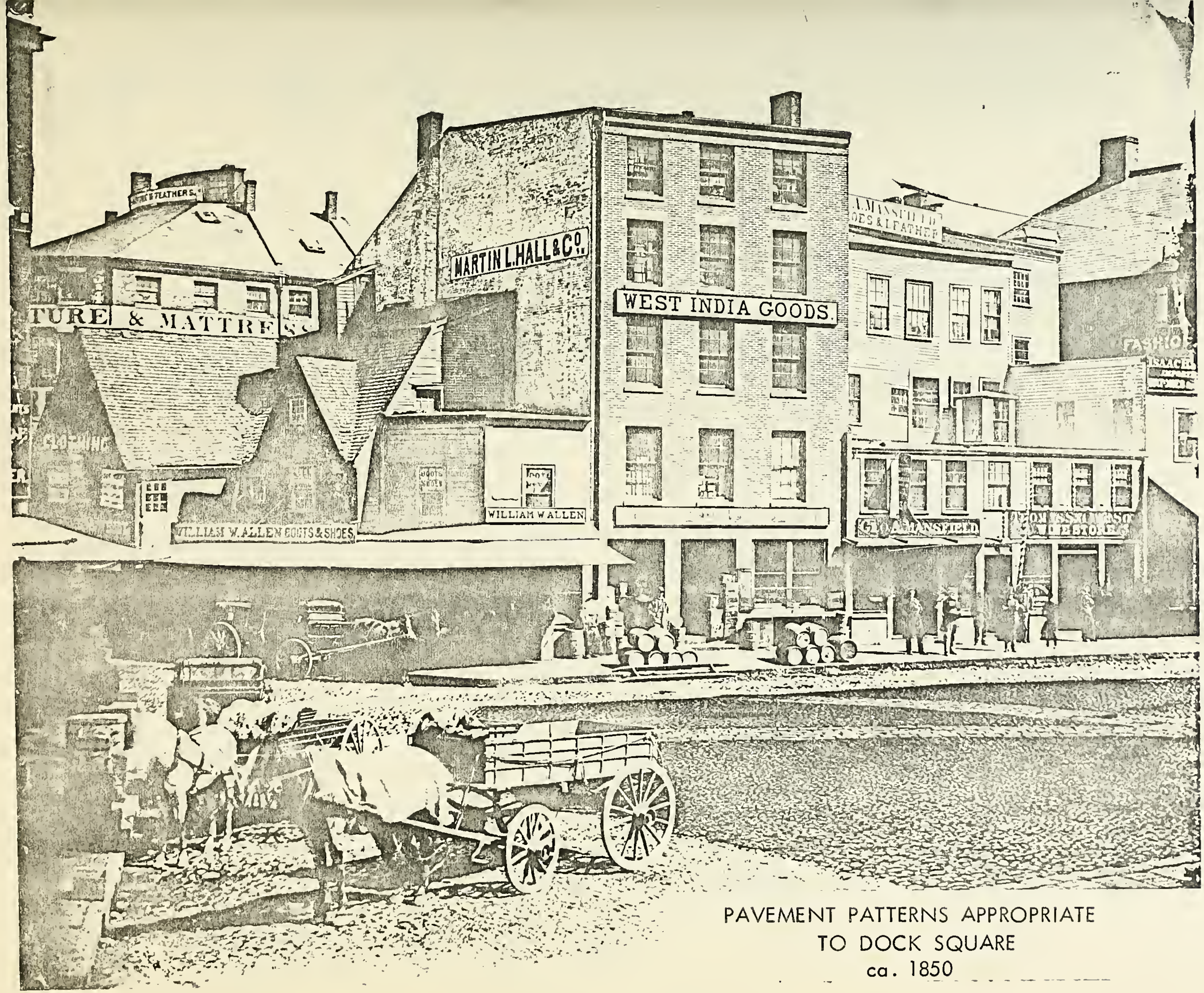
FANEUIL HALL PROPOSED RECONSTRUCTED
ORIGINAL BUILDINGS
FANEUIL HALL MARKET
INAPPROPRIATE USE OF SIGNS


CENTRAL
RESTAURANT EQUIPMENT & SUPPLY CO., INC.
REFRIGERATORS
RANGES
FRIALATORS
KITCHENS
DINING ROOMS
FORMICA BARS & BACK BARS
Serving The Food Industry
LeVIN OFFICE FURNITURE CO.
CENTRAL RESTAURANT EQUIPMENT & SUPPLY CO.
HOTELS · MOTELS
CLUBS
SCHOOLS
DESKS
Ye Olde UNION OYSTER HOUSE EST 1826
ROAST BEEF

UNION STREET FRONTAGE
BLACKSTONE BLOCK
INAPPROPRIATE SIGNS



PAVEMENT PATTERNS APPROPRIATE
TO DOCK SQUARE AND THE
MARKET DISTRICT
ca. 1877



PAVEMENT PATTERNS APPROPRIATE
TO DOCK SQUARE
ca. 1850

LeMessurier
Associates, Inc

QUINCY MARKET RENOVATION - NORTH & SOUTH MARKET STREET BUILDINGS

STRUCTURAL OBSERVATIONS

GENERAL	Buildings generally sound. Major structural repairs unlikely. Significant deterioration of structure in east end buildings due to fire and lack of maintenance. Moderate deterioration of roofs due to leaks and unrepaired flashings. Minor deterioration of granite fronts due to out-of-plumb walls and open cracks. Some basements subject to tidal flooding.
ROOFS	Slate on wood sheathing supported by peak, quarter, and eave beams. Timbers generally sound even though roof leaks widespread. Many leaks apparent. Cap flashings frequently missing at party wall extensions through roofs, and flashings at peaks and dormers require repair. Debris and loose roof flashings constitute hazard to passers-by when windy. Bricks dislodged by frozen rain where wall caps missing.
FLOORS	Framing appears to be 6 x 12 inch Eastern White Pine (pinus strobus) 18 inches on center and 20 feet long with plank sub-floor. Safe capacity about 400 pounds per square foot. Intermediate headers supported by iron hangers or mortised into main beams. Framing generally sound and level. Some floors have concrete overlayment. Some evidence of local sagging and weak connections where long headers frame stairwells.
BEARING WALLS	Generally 12 inches brick masonry corbeled to receive floor timbers. Walls appear in good condition with no cracks or evidence of settlement. Some corbels missing locally.
NONBEARING WALLS	Back walls about 8 inches brick masonry. Front walls about 10 inches granite units. Walls supported laterally at floors. At some locations sidewalk canopies have pulled walls out of plumb where tiebacks to floors not adequate. Some areas show rainwater penetration through cracks. Some sill rot likely at grade floor level. Repointing and replumbing required.
FOUNDATIONS AND BASEMENTS	No foundations observed directly. Wood piles and granite caps probable as area filled in 18th century. No foundation distress apparent from indirect observation of supported walls. Some basements have tidal flooding now controlled by sumps. Flooding possibly caused by broken storm and sanitary sewers.

QUINCY MARKET RENOVATION - CENTRAL BUILDING AND DOME

GENERAL CONDITION

The entire structure appears to have been exhaustively analysed, reframed and strengthened during the mid-1930's, and it remains in good general condition today.

DOME CONSTRUCTION

The central oval domes are built of spliced wood meridianal ribs. The outer dome supports the copper roofing and is generally free from the smaller inner dome which forms the old ceiling, except that the inner (ceiling) dome appears to have been hung from the outer (roof) dome ribs near their springing points by 4 x 4 inch wood hangers with nailed (originally) connections.

During the reframing (circa 1935), the inner dome was permanently shored by a new steel truss and beam system, and a lower flat ceiling was hung below. Mr. John M. Gray, one of the original architects for the restoration work, recalls that the ceiling was lowered to reduce heating volume and to create work (during the depression) rather than to correct structural deficiencies. However, there is evidence that the hangers in the southwest quadrant of the inner dome may have failed at some earlier date as the ceiling has sagged badly in that area.

Although the domes have survived collapse during their first century, steel supports appear to have been installed under the quadrants unsupported by masonry walls sometime after the original construction. In addition, the inner (ceiling) dome has suffered multiple and continuing plaster cracking (which were kept patched) throughout its life.

DOME RESTORATION

It is desired to remove the lower ceiling and to restore the original vaulted ceiling to view.

We suggest the following observations be considered for this restorative work:

(1) Check the nailing of the plaster grounds for rusting. While the plaster itself may have remained intact if moisture was present, the nails for the plaster grounds may have corroded away.
(2) Check condition of existing wood framing for dry rot, splits, checks or other signs of distress. Note that large sections of the ribs of the inner dome have been cut out to form deep reveals in the plaster work.
(3) Conduct a detailed survey for the purpose of verifying the structural integrity of the existing wooden rib system.
(4) Install a new support system for the inner dome, which most probably should be located behind the present spring line so the old ceiling line can be extended to the old segmental arches located along the masonry sidewalls.

RESTORATION COST

Since our observations were limited, our cost estimates can only represent what we believe to be an appropriate order of magnitude. A deeper investigation of points 1, 2, and 3 above may require substantial cost increases or may show the work to not be feasable. However, assuming the plaster nailing and wood ribs are sound, and that the system is safe, we would expect a new support system for the inner dome to cost about $15,000, exclusive of engineering fees.

PROGRESSIVE CONSULTING ENGINEERS INC.

TELEPHONE 876-1143

Room 406
[illegible]
238 MAIN STREET
CAMBRIDGE. MASS.

August 01, 1968

MECHANICAL REPORT
Faneuil Hall Area
Downtown Waterfront
Boston, Massachusetts

1. CRITERIA

A. The primary objective has been to provide a good heating and cooling system for the area in general, keeping in mind that any major renovation at this time will involve a long term capital investment, and that the success of one building in the area will depend largely on the surroundings.

B. The criteria for Architectural integrity of the proposed area exclude such devices as:

1. Window type Air Conditioners
2. Roof top type Condensing Units
3. Objectional conditions, such as precipitation or fog from cooling towers.

C. The flexibility of the system will have to be such that it will accept constant changes in heating and cooling loads for many years to come without compromising it's Architectural integrity.

D. The degree of comfort offered by the heating and cooling system will have to parallel that which the prospective tenant may be offered in the building of the future.

E. Maintenance must be minimal because of the long term nature of the capital investment.

Continued

2. COOLING MEDIUM

A. A Central Plant chilled water system has been selected because it appears to meet most of the above criteria.

B. Conventional chilled water plants employ one of the following means to dispose of the heat which the system takes out of the buildings:

1. Cooling Towers - These devices will create a fog over the building under certain weather conditions.
   The existing roofs are not suitable for supporting the devices as they weigh approximately 50,000 lbs.

2. Air Cooled Condensers - These devices are not presently manufactured in the sizes required for the purposes of this installation. Also, they would be very expensive to operate, and in the sizes required, would be extremely noisy in operation.

3. Well or Sea Water - Our investigations have shown that there is not enough ground water available in this area. Sea Water would be too expensive to install.
   (See our report dated October 27, 1967)

4. Our recommendation is to build a heat sink, utilizing the City Sewer.
   (See our report dated December 21, 1967)

Continued

3. THE PROPOSED DISTRICT SYSTEM

A. The Central Plant. Our recommendations are for the installation of Two Centrifugal Type Water Chillers, to be installed in the basement of the Quincy Market Building. These chillers will be arranged to work as heat pumps for the major part of the year, and to be shut down only during very cold weather.

The heat pump system will inherently provide heating and cooling simultaneously.

The Heat Sink function will provide heat which it extracts from the city sewer during cool weather, and will absorb heat from the Heat Pump during hot weather, which it will dispose of to the city sewer.

During very cold weather, the heat pump will be shut down, and Edison Steam will be used as a heating medium.

B. The Distribution System. Chilled and Hot Water will be piped through tunnels to the various buildings.

The tenants will thus be able to increase or decrease their demands for many years, and without disturbing their neighbors.

Continued

4. NORTH & SOUTH MARKET STREET INTERIOR SYSTEM

A. Exterior rooms will be heated in the winter by a perimeter radiation system. Hot water for this system will be served from the service tunnel.

B. Exterior rooms will be cooled in the summer by a fan-coil type unit, located in the interior spaces, These units are both suspended over dropped ceilings and enclosed by partitions. Air will be ducted to side wall grilles, so that no ceilings will be required to hide ducts in outside rooms. No Mechanical ventilation will be provided, due to retention of operable window.

C. Interior rooms shall be similar to exterior rooms, except that segments of ceilings shall be required to conceal ducts. Fresh Air shall be ducted from attic spaces to fan-coil units.

D. Chilled, and hot water piping, and condensate drains will run vertically thru the building on approximately 22 foot modules. Pipes will be slightly over-sized for flexibility.

Continued

5. QUINCY MARKET BUILDING INTERIOR SYSTEM

A. Exterior walls will be heated in the winter by a perimeter radiation system. Hot water for this system will be served from the service tunnel.

B. First and second floor spaces will be heated and cooled by a double duct system originating in the attic. (See sketches)

C. Basement spaces will be heated and cooled by a fan-coil system. (See sketches)

D. Hot and chilled water will be served from the service tunnel.

6. UNDERDRAINAGE SYSTEM

A. Perforated pipes will be run under the basement floor slab in each bay (approximately 25 feet on centers) of all buildings. These pipes will run perpindicular to the service tunnel, and will drain into a cast iron header in, or partly under, the service tunnel.

Cast iron headers will drain into a large sump pump in the center of each tunnel. Pumps will transfer the water to the nearest sewer.

PROGRESSIVE CONSULTING ENGINEERS INC.

TELEPHONE 876-1143

Room 406
238 MAIN STREET
CAMBRIDGE, MASS.

December 21, 1967

F. A. Stahl & Associates
177 Milk Street
Boston, Mass. 02109

Attention: Mr. F. A. Stahl

Reference: Downtown Waterfront
Plate coil Heat Exchanger
For Cooling Water

Dear Mr. Stahl:

We have made a tentative design of a heat exchanger chamber for supplying cooling water to the various buildings in this part of the project. Waste water and sewage from the proposed new 48" sewer is to be circulated through the plate coil chamber, with cooling water circulated through the coils.

It is estimated that the total refrigeration requirements are for 800 tons of refrigeration. Part of this load is for air conditioning, and part for the tenant's refrigeration equipment. A load of 800 tons of refrigeration will require 1,200 gpm of cooling water. In order to cool this amount of water, 2,400 gpm of waste water and sewage is required. A 48" sewer flowing 1/3 full will supply this amount and more, depending upon the velocity of flow.

It is understood that the level of water in the sewer rises and falls with the tide, causing at times a reversal of the direction of flow in the sewer. During slack tide there would be very little velocity of flow. However, it is evident that the sewage flow into the sewer will remain, so that there will be a continuous flow of 2,400 gpm of cooler waste water entering the sewer system. During this same period, the sewer and also the plate coil chamber will be full of waste water, and there will be a large volume of waste water present to absorb heat.

continued

PROGRESSIVE CONSULTING ENGINEERS INC.

TELEPHONE 876-1143

Room 406
XXXXXXX
238 MAIN STREET
CAMBRIDGE, MASS.

December 21, 1967

In order to take advantage of the storage or heat sink capacity of the sewer lines and of the plate coil chamber during the slack period, the pump discharge lines have been shown extended down to the State Street manhole. With such an arrangement, and under almost static conditions, the warmer water will rise to the top of the filled sewer lines, and to the top of the plate coil chamber, leaving the plate coils exposed to the cooler water entering from near the bottom of the 48" sewer line. Under conditions of maximum refrigeration capacity requirements, there will be ample cooling capacity for full operation of all equipment for a period of two hours or more, even if there were no flow of waste water at all. Since we know that there will always be a flow of waste water into the sewer, there will always be capacity for continuous operation.

During the air conditioning season, the coincidence of maximum cooling demand and high tide will occur only a few times during the season.

During the heating season when the heat pump is drawing heat from the sewage system, there will be periods of high tide when the admixture of cold sea water will reduce the heating capacity of the system somewhat. However, the storage capacity of the system plus the fact that the action of the plate coils is reversed, taking heat from the waste water and causing the colder waste water surrounding the coils to sink to the bottom of the chamber will tend to increase the available capacity.

Since sea water is a poor source of heat during the winter months, and there will be some admixture of sea water, it will be necessary to have some source of supplemental heat during the coldest periods. Such a source of supplemental heat could well be Edison steam, and it should be noted that the quantity of steam used will be only a fraction of the required if steam were used as the sole supply of heat.

continued

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TELEPHONE 876-1143

Room 406
XXXXXXX
238 MAIN STREET
CAMBRIDGE, MASS.

December 21, 1967

We enclose a sketch of a site plan and a diagrammatic sketch showing relative scale.

We believe that this system is feasible, and will eliminate the need for cooling towers, and will allow the use of a heat pump.

enclosures

Sincerely,

Warren P. Connor

PROGRESSIVE CONSULTING ENGINEERS INC.

TELEPHONE 876-1143

Room 406
238 MAIN STREET
CAMBRIDGE, MASS

October 27, 1967

F. A. Stahl - Faneuil Hall Area

Further Report on Cooling Water Investigation

At the outset, we contacted three well drilling contractors. All of them thought that the idea was feasible. Two of them were not sure of being able to get 1,000 gpm out of a single well, but thought that by drilling several test wells that it would be possible to bring in two wells at different locations, with a capacity of 500 gpm each.

We have since contacted the D. & L. Maher Co. of North Reading. Our conversation was brief. As soon as we identified the area he said to forget it. He knows of several wells in the area, and some in the Atlantic Avenue, Pearl Street area. Not one of them is good for over 50 gpm. Fairly recently, there was a well sunk near the North Station. This went down over 1,000 feet, and the best yield that they could get was around 50 gpm. He said very definitely that there is no underground river in this area, and that the chance of finding anywhere near the amount of water that we require is nil.

Yesterday morning, the R. E. Chapman Company of West Boylston phoned in with more information. This is one of the three contractors that we contacted originally. Their Mr. Baker reports that he has investigated test boring data in the Faneuil Hall area. All data indicate blue clay at 70 or 80 feet. Some show fine sand, but no worthwhile amounts of water. He regretfully stated that, while they are ready, able, and willing to drill any amount of test wells we might wish, that they, in all honesty, would have to call it a wild gamble.

Another well drilling firm is Wayne Water Wells, of 15 Rider Street, Arlington. Their Mr. Erickson is familiar with the area in question. He claims that while there is blue clay in the area, it's location is spotty. As he puts it, there are fingers of clay in the area. With luck, it might be possible to miss a finger of clay, and go into coarse sand. In this case, we might be able to get the capacity that we require. However, this is pure surmising.

continued on page 2.

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PROGRESSIVE CONSULTING ENGINEERS INC.

TELEPHONE 876-1143

Room 406
XXXXXXX
238 MAIN STREET
CAMBRIDGE, MASS.

October 27, 1967

Further Report on Cooling Water Investigation - continued

According to Mr. Erickson's estimates, the usual test well is 2-1/2" in size, and will cost from $1,500 to $2,000. A completed 500 gpm well will cost approximately $15,000, and a completed 1,000 gpm well will cost approximately $20,000.

We have other estimates of from $1,000 to $1,500 per test well, and $10,000 to $15,000 for a completed well. Also, $15,000 to $20,000 for a 1,000 gpm completed well.

From available data, and before sinking any test wells, it is evedent that there is no possibility of obtaining a 1,000 gpm well. Only by a miracle could we obtain a 500 gpm well, and we would require four of these: two supply wells and two return wells. Since a completed well is expensive, it would be necessary to sink a test well first, in each location. This means four test wells. So that if we were able to compound our miracles and hit it right every time, the minimum cost of a well water supply would be $40,000. As follows:

4 test wells averaging $1,000 each	$ 4,000
2 completed 500 gpm supply wells @ $10,000	20,000
2 completed return wells, 500 gpm, @ 8,000	16,000
Total	$40,000

On the other hand, we might sink eight or ten test wells, and come up with eight or ten dry holes. This means a $10,000 gamble with no return.

From the evidence at hand, we feel, regretfully, that we will have to back off on the well water idea as an unjustifiable gamble.

At present, this leaves us with bu two alternatives; the use of cooling towers, or the use of harbor water.

continued on page 3.

PROGRESSIVE CONSULTING ENGINEERS INC.

TELEPHONE 876-1143

Room 406
~~ROOM 220~~
238 MAIN STREET
CAMBRIDGE, MASS.

October 27, 1967

Further Report on Cooling Water Investigation - continued

The use of harbor water will be expensive. It is nearly 1,000 feet to the nearest harbor water, in a straight line. The piping required would be a minimum of 2,000 feet, allowing for supply and return. If we laid pipe in the same trench as the proposed new sewer line, the length would be double this. Harbor water is very cold in the winter time. To use harbor water as a source of heat for a heat pump would require pumping about 20,000 gpm. We are now talking about a minimum of 24" pipe, pump heads of about 180 feet, and pumping horsepower of something over 1,000. Of course, if we used 36" pipe, the horsepower would be cut to around 55. The above figures are ball-park figures, but even so, all of this does not make the use of harbor water feasible for heat pump use.

It therefore appears that the most practical solution is to abandon the idea of a heat pump, and to use cooling towers and refrigeration for cooling, and either Edison steam or a boiler plant for heat.

PROGRESSIVE CONSULTING ENGINEERS INC.

TELEPHONE 876-1143

Room 401
238 MAIN STREET
CAMBRIDGE, MASS.

October 27, 1967

F. A. Stahl - Faneuil Hall Area

Quincy Market Cold Storage & Warehouse Co.

We contacted Mr. Harold L. Burton of the Central Plant of the Quincy Market and Cold Storage plant. They have brine circulating lines in Chatham, South Market, and Clinton Streets. They do not plan on abandoning any of these. While they have abandoned some lines, these are all in other areas.

Their present plant has a capacity of only 350 tons of refrigeration. They are circulating 2,200 gpm of brine, which leaves their plant at 13F and returns at a maximum temperature of 17F. They are operating at capacity and are not interested in any additional load.

Our potential load is about 800 tons. This greatly exceeds their present capacity, and they have no plans for expansion.

PROGRESSIVE CONSULTING ENGINEERS INC.

TELEPHONE 876-1143

Room 406
~~ROOM [illegible]~~
238 MAIN STREET
CAMBRIDGE, MASS.

April 11, 1968

Downtown Waterfront

Comparison of Energy Costs per Year

Proposition #1 Edison steam for heating plus Absorption Machine

Electrical cost per year	$5,080
Steam cost per year	47,045
	$52,125

Proposition #2 Edison steam for heating plus Centrifugal Water Chillers

Electrical cost per year	$17,160
Steam cost per year	31,845
	$49,005

Proposition #3 Edison steam for heating plus Air Cooled Condenser Water Chillers

Electrical cost per year	$22,400
Steam cost per year	31,845
	$54,245

Proposition #4 Heat Pump

Electrical cost per year	$38,800
Steam cost per year	1,620
	$40,420

M-14

"WORLD'S LARGEST WATER DEVELOPERS"
Layne-NEW ENGLAND COMPANY
A BRANCH OF LAYNE-NEW YORK COMPANY, INC.
WATER WELLS * WELL PUMPS * WATER TREATMENT
ASSOCIATED LAYNE WATER SUPPLY COMPANIES OPERATE THROUGHOUT THE COUNTRY

15 RYDER STREET
Arlington 74, Mass.
PHONE:
648-5300

RECEIVED
NOV 9 1967
PROGRESSIVE CONSULTING
ENGINEERS, INC.

November 9,1967

Progressive Engineers,Inc.
238 Main Street
Cambridge, Massachusetts

Gentlemen:

Re: GROUND WATER
VICINITY OF FANUEL HALL
B.R.A

Gentlemen:

As a result of your inquiry regarding the possibility of developing a water supply from wells, capable of yielding 500 - 1000 GPM,in the vicinity of Fanuel Hall, we have investigated existing test wells in the area and do not believe this to be a feasible project. For your information a typical log of the soil formation in the area is as follows:

0' - 11'	Fill
11' - 22'	Hard yellow clay
22' - 29'	Fine blue sand
29' - 38'	Hard blue clay
38' - 47'	Fine blue sand
47' - 88'	Hard blue clay
88' - 95'	Till
95'	Bedrock,slate or shist

We regret the results look so gloomy, however if we can be of assistance on other projects in the future please feel free to call on us.

Very truly yours,

LAYNE-NEW ENGLAND COMPANY

David M. Erickson

David M.Erickson
District Manager

DME:wct

HEROSY, LOTTERO & MASON ASSOCIATES, INC.
Consulting Electrical Engineers
120 BOYLSTON STREET · BOSTON, MASS. 02116
Telephone: 423-7370

JOSEPH V. HEROSY
ALFRED E. LOTTERO
LYN A. MASON

ELECTRICAL ENGINEERING
DESIGN AND REPORTS

ELECTRICAL REPORT

Faneuil Hall Area
Downtown Waterfront
Boston, Massachusetts

I INTRODUCTION

A. The primary objective has been to determine the feasibility of providing electrical facilities to and within the existing buildings, which will be equivalent to those found in a new, modern office building. This is to be done concealed within the framework of the restored original buildings.

The secondary objective was to provide these facilities in such a manner as to eliminate the need for excavation in surrounding streets as building use changed, and to minimize the work required within the buildings to accomodate changes in tenants.

B. This study assures that both objectives can be accomplished. A common service tunnel to the buildings, coupled with a modular concept for providing services to the tenant spaces offers a unique opportunity to design a very flexible system that will provide all anticipated normal electrical requirements for years to come, for a variety of building uses.

C. All service facilities will be located in the common service tunnel, such as meters, telephone terminal cabinets and fire department connections. Wiring changes for shifts in tenant occupancy, whether it be an expansion of space, reduction of space or tenant change will be accomplished in the service tunnel, or in the particular tenant's space, without disturbing adjacent tenants.

Wiring facilities will be installed concealed, within the original framework of the building, to permit complete flexibility in the arrangement of non-permanent walls. New facilities will not affect restoration of the buildings to their original outward appearance as a section of Boston rich in historical significance; complemented by the adjacent Faneuil Hall building and in dramatic contrast with the new City Hall and Govenment Center.

D. Scope

The electrical facilities under consideration include separately metered electrical wiring, N.E.T. & T. Company Telephone wiring, fire alarm wiring and empty conduit provisions for the following:

1. Signal and interior communication systems
2. Television Antenna Systems (for apartment space)
3. Special effect lighting (for exhibition and banquet areas, 2nd floor, Quincy Market Building)
4. Television and/or radio origination facilities (for exhibition and banquet areas, 2nd floor, Quincy Market Building)

E. Definitions

The following terms will be used for clarity:

Tenant Unit: For purpose of this report, the assumed minimum amount of space on each floor which could be occupied by a tenant. Refer to the floor plans for sizes.

Tenant Space: The space to be ultimately occupied by one tenant. This could be a combined number of tenant units.

Building Unit: In Quincy Market Building, approximately one half of the total building.

In North and South Market Buildings each section of the total building separated by brick walls.

Block: In Quincy Market Buildings, the entire building. Two Building Units. In the North and South Market Buildings, each entire building. Twenty Two building units per block.

F. Drawings

Electrical drawings illustrate the wiring methods. Electrical wiring only is illustrated, since new wiring facilities are the primary concern at this time. However, this plan can be expanded at any time to include the communication and signal systems which are summarized at the conclusion of this report.

Drawing E-1: Site Plan, is included to show the Edison Co. electric service and the common service tunnel into which the Market Buildings will be integrated.
Drawing E-2: Part Plan, illustrates typical tunnel distribution for the North and South Market Buildings.
Drawing E-3: Typical Tunnel Section-Metering Facilities, illustrates a typical metering group in the service tunnel.
Drawing E-4: Typical Tunnel Section-Telephone Facilities, illustrates a typical N.E.T.&T. Company cabinet facilities.
Drawings E-5, E-6, E-7, & E-8: Quincy Market Buildings, indicate the tenant units and the wiring scheme to each unit, for one half of the block plus the Great Room. The second half will be similar.
Drawing E-9: North and South Market Building, indicates a typical occupancy scheme.

II. UTILITY COMPANY FACILITIES

A. New England Telephone and Telegraph Company

1. N.E.T.&T. Company will provide telephone service to each tunnel end from Commercial Street and Faneuil Hall Square.
2. N.E.T.&T. Company will run telephone ducts and/or cable the length of each tunnel, along the ceiling of the tunnel. See Part Plan, drawing E-2.
3. N.E.T.&T. Company will install and maintain telephone terminal cabinet in the tunnel, furnish and install an individual cable to each tenant space, and provide tenant telephone facilities. See typical section, telephone facilities, drawing E-4.
4. All telephone equipment will be installed in tenant space.

B. Boston Edison Company

1. Boston Edison Company maintains a secondary network electrical system in this area of the city. This system will be expanded to include the buildings under study.

2. A secondary network system can be defined as a group of transformer vaults, each vault served by underground high voltage service, and each vault in turn providing low voltage service for customer use. The low voltage services from these vaults are "looped" together, or interlocked, to provide a network of low voltage service that provides highly reliable and flexible customer service.

3. It is estimated that approximately six transformer vaults will be required for the buildings under study. These vaults will be positioned adjacent to the service tunnels to minimize excavation and to provide the maximum flexibility of customer service.

4. Edison Company network ductlines, both high voltage and low voltage, must be isolated from the tunnel. Network ductlines will be run adjacent to the outer tunnel walls. Refer to site plan, drawing E-1.

5. Transformer vaults, for reasons of safety and construction requirements, cannot be subject to vehicular traffic. It will be necessary to provide a curb or some other barrier in the street above the vault to limit vehicular travel, as indicated on drawing E-1. Vaults should be raised to sidewalk level and coordinated with street drainage.

6. Please note that it will be necessary to permit Edison Company trucks to approach the vaults on occasions when it is necessary to install, exchange or otherwise service the transformers.

7. From each vault, the Edison Company will provide 120/208 volt, three phase, four wire customer service to a terminal point in the tunnel, for service to the buildings units. A terminal point can be defined as a large cabinet at which the Edison service ends and the building wiring begins.

C. Boston Fire Department

1. It is expected that the Boston Fire Department will also make use of the service tunnel for fire alarm wiring to street boxes in the area and possibly to individual interior building fire alarm systems.

2. Fire department wiring in this area generally occupies space in the same duct lines and manholes as the New England Telephone and Telegraph Company.

3. Fire department wiring will not be detailed in this study however; if required it will generally follow N.E.T.&T. Company lines.

4. The Quincy Market Building, since it is an historical building, City of Boston Property and will have space throughout the second floor suitable for exhibitions and meeting rooms, should be provided with a fire alarm system. This system will be eligible for direct connection to the Boston Fire Department.

D. Existing Facilities

1. There exists a single conduit buried along each of North Market Street and South Market Street, for the street lighting. This wiring could be abandoned.

2. There are no other buried electric, telephone or fire alarm facilities on North or South Market Street which will conflict with the new central service tunnel concept.

III BUILDING SERVICES

A. General

1. While planning the electric and telephone services to and within each building, every effort was made to provide a concealed wiring system which is both initialy adequate for any anticipated future requirement and sufficiently flexible to provide the following tenant facilities:
    a. Individual metering and telephone facilities to each tenant unit, to allow the maximum number of tenants.
    b. The means by which a tenant can expand either vertically within one building, horizontally on one floor, or in both direction, with only minor wiring adjustments being required.
    c. When units are combined for one tenant, the electrical wiring will be combined on one meter by minor changes in the tunnel and the telephone system can be expanded by wiring changes in the tunnel (service) and in the tenant space (instruments).

2. Regulations impose certain limitations on the electrical wiring system. The physical length of each block of buildings will also impose economical limitations on the electrical wiring system.

    For example, while there is no limitation on vertical tenant expansion, there is a definite limitation on horizontal tenant expansion, within the framework of a flexible wiring system. In the buildings under study, a tenant could occupy up to one half of an entire floor on one block (approximately 13,000 square feet) and maintain a single metered electric service. Any further horizontal expansion would require a second metered service.

    In addition, regulations require that each privately owned building unit within a block shall be provided with a separate electric service and the electric wiring shall be isolated from an adjacent building unit, if the adjacent building is under another ownership. Practically, this means that while a tenant can expand horizontally through building units of different ownership the tenant would be required to maintain a separately metered and isolated electrical system for each individually owned building unit.

    Therefore, from an electrical view point it would be advisable to limit ownership to groups of adjacent building units within a block, in the North and South Market Buildings.

    For purposes of this study, ownership of the North and South Market Buildings groups of eleven buildings units, that is, two owners per block.

B. Telephone System

1. Individual empty conduits will be installed between the N.E.T.&T. terminal cabinet in the tunnels and each tenant unit. This will provide facilities for making telephone wiring changes without disturbing adjacent tenants.

2. Refer to drawing E-4 for typical section at telephone facilities. Telephone mounting panel will be spaced away from the tunnel wall, in a free standing arrangement, to permit space for and access to drains on the inside tunnel wall and to allow room for water, gas, heating and cooling services to each building unit.

C. Electrical System

1. Main service switches will be installed in the tunnels to each Edison Company terminal point. These switches will be controllable from remote stations, readily accessible to the tenants as required by regulations.

2. Service distribution will be run horizontally on the inside wall of each tunnel to a terminal box and sub-service switch at each metering group. Refer to part plans drawings E-2 & E-5.

3. Meters will be arranged in groups generally one group for each two building units. Meter groups will be arranged for the initial number of tenants, with adjacent space reserved for the future addition and/or modification of meters as occupancy changes. Refer to drawing E-3, typical metering facilities, on which a typical installation for 16 tenants is shown.

4. Meter groups will be mounted away from the wall, in a free standing arrangement, not only for wiring flexibility, but to permit space for and access to drains on the inside tunnel wall, and to allow room for water, gas heating and cooling services to each building unit.

5. Individual wiring (called feeders) will be provided between the meter group and each tenant unit. This will permit wiring changes for one tenant without disturbing adjacent tenants. These feeders can be individually connected to meters to permit the maximum number of tenants, or a number of feeders can be combined on one meter of provide a larger tenant space. Tenant spaces in one meter group can be combined with tenant spaces in an adjacent meter group by providing interconnecting wiring in the tunnel.

6. A circuit panel will be provided in each tenant unit for the wiring requirements of each unit.

D. Fire Alarm System

1. The Quincy Market Building block, because it is a national historical building and could consist of public exhibition areas and meeting halls on the second floor should be protected by an automatic interior fire alarm system, directly connected to the Boston Fire Department.

2. An interior fire alarm system is recommended for the buildings in the remaining two blocks under study. However, systems in privately owned buildings are not ordinarily directly connected to the Boston Fire Department, except upon special application and permission.

E. Miscellaneous Systems

1. Street Lighting should be an integral part of the restoration plan, rather than the standard commercial type of street light. A colonial type of mall lighting could be installed for a traditional atmosphere.

Wiring for street lighting can be run through the service tunnel, to the street lights.

2. Alarm systems, such as ATD alarm, are usually installed within tenant spaces by the respective alarm company, at the expense and direction of the tenant.

3. Signal, interior communication and television antenna systems are usually furnished and installed by the tenant.

Special effect lighting or television camera origination is usually furnished and installed by the tenant or by the Television and Radio Broadcashing Company.

We propose systems of empty conduit between the service tunnel, the tenant units and the building attic spaces to facilitate the installation of one or a combination of the above systems.

HEROSY, LOTTERO & MASON ASSOCIATES, INC.
Consulting Electrical Engineers
120 BOYLSTON STREET · BOSTON, MASS. 02116
Telephone: 423-7370

JOSEPH V. HEROSY
ALFRED E. LOTTERO
LYN A. MASON

ELECTRICAL ENGINEERING
DESIGN AND REPORTS

ELECTRICAL REPORT

Quincy Market Building
Boston, Massachusetts

I INTRODUCTION

A. The purpose of this study has been to develope a scheme for providing new electrical facilities within the restored Quincy Market Building, integrated with the central service tunnel concept.

The study shows that it is feasible to provide new electrical facilities equivalent to those found in a new, modern office or retail store building. The common service tunnel along the building, combined with a modular concept for providing services to the tenant spaces will result in a very flexible system that will provide all anticipated normal electrical requirements and occasional abnormal electrical requirements for years to come and for a variety of building uses.

B. Although this study is primarily for demonstrating the feasibility of providing new Edison Company service and separately metered tenant wiring, budget cost estimates are included for a variety of electrical, communication and signal systems which could be included in the restoration of this building. A complete restoration of this building should include a combination of these facilities because of the potential diversity of use.

C. This study is based on an assumed number of tenants, as defined and illustrated in this report.

D. Definitions

The following terms will be used for clarity:

Tenant Unit: For purposes of this report, the assumed minimum amount of space on each floor which could be occupied by a tenant. Refer to the floor plans for sizes.

Tenant Space: The space to be ultimately occupied by one tenant. This could be a combined number of tenant units.

Building Unit: Approximately one half of the total building.

Block: The entire building. Two building units.

E. DRAWINGS

Electrical drawings illustrate the wiring methods. Electrical wiring only is illustrated, since new wiring facilities are the primary concern at this time. However, this plan can be expanded at any time to include the communication and signal systems which are summarized at the conclusion of this report.

Drawing E-1 Site Plan, is included to show the Edison Co. electric service and the common service tunnel into which the Quincy Market Building will be integrated.

Drawing E-3 and E-4 Typical Tunnel Sections, illustrate typical metering and telephone facilities in the service tunnel.

Drawing E-5, E-6 and E-7 Half floor Plans, indicate the tenant units and the wiring scheme to each unit, for one half of the block plus the Great Room. The second half will be similar.

Drawing E-8 Typical Composite Building Cross section, illustrates in schematic form, the typical wiring vertically through the building.

II UTILITY COMPANY FACILITIES

A. GENERAL

Utility services are based on acceptance of the central service tunnel concept. The service tunnel will run the length of the block. Refer to site plan, Drawing E-1.

B. BOSTON EDISON COMPANY

1. The study is based on the Boston Edison Company providing two electric services, one to the center of each building unit. Refer to basement floor plan, drawing E-5. Two services are preferred because of the unusual length of the block.

2. Service will be 120/208 volts, three phase, four wire A.C.

III BUILDING WIRING

A. GENERAL

1. While planning the electric services within the building, every effort was made to provide a concealed wiring system which is both initially acequate for any anticipated future requirement and sufficiently flexible to provide the following tenant facilities.

   a. Individual metered electric wiring to each tenant unit, to allow the maximum number of tenants.

   b. The means by which a tenant can expand either vertically, horizontally on one floor, or in both directions, with only minor wiring adjustments being required.

c. When units are combined for one tenant, the electrical wiring will be combined on one meter by minor changes in the tunnel.

2. Regulations impose certain limitations on the electrical wiring system. The physical length of the building will also impose economical limitations on the electrical wiring system.

   For example, while there is no limitation on vertical tenant expansion, there is a definite limitation on horizontal tenant expansion, within the framework of a flexible wiring system. In the building under study, a tenant could occupy up to an entire floor on one building unit (approximately 13,000 square feet) and maintain a single metered electric service. Any further horizontal expansion into the second building unit would require a second metered service.

   In addition, regulations require that one building unit, since it is provided with a separate electric service shall be electrically isolated from the adjacent building unit, since the adjacent building unit is served by a second electric service. Practically, this means that while a tenant can expand horizontally through building units, the tenant would be required to maintain a separately metered and isolated electrical system in each building unit.

   The somewhat limited possibility that a tenant may be reqired to maintain two separately metered electrical systems by virtue of the physical location of the space appears to be the only wiring limitation.

3. Refer to floor plans, drawing E-3, E-4, & E-5. For purposes of this study and as a basis for the budget estimates, each floor was divided into what is considered the smallest practical rental space. These "tenant units" a total of 114, are defined on the floor plans.

4. On the basement floor, the tenant units are determined by the existing walls and average 1,000 square feet in area. This floor is planned for retail stores, storage or office space.

5. On the first floor, the tenant unit is approximately 300 square feet in area. This floor is planned for retail stores or office space. A larger tenant space, where required, would be accomplished by combining adjacent tenant units and, in some cases, including a basement space.

6. The second floor is planned for use as large banquet-exhibition halls, office space, or a combination of both. The tenant unit on this floor is approximately 460 square feet in area and expandable by combining adjacent areas. It is assumed that the Great room will be restored for use as a banquet or meeting room and will not be used as office space.

B. ELECTRICAL SYSTEM

1. Main service switches, will be installed in the tunnels to each Edison Company Service point. These switches will be controllable from remote stations, readily accessible to the tenants as required by regulations.

2. Service distribution will be run horizontally on the inside wall of each tunnel to a terminal box and sub-service switch at each metering group. Refer to basement plan drawing E-5.

3. Meters will be arranged in groups. Meter groups will be arranged for the initial number of tenants, with adjacent space reserved for the future addition and/or modification of meters as occupancy changes. Refer to drawing E-3, typical metering facilities, on which a typical installation for 16 tenants is shown.

4. Meter groups will be mounted away from the wall, in a free standing arrangement, not only for wiring flexibility but to permit space for and access to drains on the inside tunnel wall, and to allow room for water, gas, heating and cooling services to each building unit.

5. Individual wiring (called feeders) will be provided between the meter group and each tenant unit. This will permit wiring changes for one tenant without disturbing adjacent tenants. These feeders can be individually connected to meters to permit the maximum number of tenants, or a number of feeders can be combined on one meter to provide a larger tenant space. Tenant spaces in one meter group can be combined with tenant spaces in an adjacent meter group by providing interconnecting wiring in the tunnel.

6. A circuit panel will be provided in each tenant unit for the wiring requirements of each unit. Refer to floor plans, drawings E-5, E-6 and E-7.

7. On the second floor a dual wiring system is planned for the Halls, arranged in two steps or phases. The basic system, called phase #1, will consist of the following in each hall:

    a. Individual empty conduit for feeders, from the meter group in the tunnel to a junction box in the attic. This will provide built-in wiring provisions for office spaces.

    b. A separate feeder to a hall panel. This will provide branch circuit wiring for hall use. This feeder will also be extended to the attic space, to permit the addition of special exhibition lighting at any time, by wiring through the attic.

    Phase #2 would be required if the halls are converted to office space. When dividing partitions are installed, individually metered tenant panels could be installed in the new partitions and the feeders easily extended through the attic space, from the junction box to each tenant panel.

    This dual arrangement will provide the high degree of flexibility required by such a diversified space.

    The Great Hall will be provided with one feeder only, to a lighting panel. This feeder and panel will be oversized and extended into the crawl space of the domed ceiling for future special lighting effects and the possibility of television origination. Refer to composite building cross section dwg E-6.